

SUBCOURSE  
AV0661

EDITION  
A

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## US ARMY AVIATION CENTER

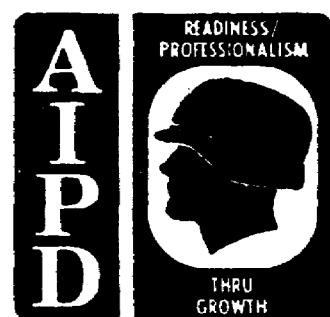


### AVIATION SURVIVAL

#### PART I-SURVIVAL ELEMENTS, PSYCHOLOGICAL ASPECTS, AND SURVIVAL MEDICINE

THIS SUBCOURSE HAS BEEN REVIEWED FOR  
OPERATIONS SECURITY CONSIDERATIONS.

THE ARMY INSTITUTE FOR PROFESSIONAL DEVELOPMENT  
ARMY CORRESPONDENCE COURSE PROGRAM



AVIATION SURVIVAL

Part I. SURVIVAL ELEMENTS, PSYCHOLOGICAL ASPECTS,  
AND SURVIVAL MEDICINE

Subcourse Number AV0661

**EDITION A**

United States Army Aviation Center  
Fort Rucker, Alabama 36362-5000

4 Credit Hours

Edition Date: June 1993

**SUBCOURSE OVERVIEW**

This correspondence course reflects a basic knowledge of survival procedures and techniques. This knowledge will increase your chances of surviving after a crash, a forced landing, or being captured by the enemy.

No prerequisites exist for this subcourse.

This subcourse reflects the current doctrine when it was prepared. In your own work, always refer to the latest publications.

Unless otherwise stated, the masculine gender of singular pronouns refers to men and women.

**TERMINAL LEARNING OBJECTIVE**

ACTION: Adopt the Code of Conduct as a behavioral guide for survival and maintain the physical capability to survive.

CONDITION: You will use the material in this correspondence course.

STANDARD: To prove competency of this task, you must achieve a minimum of 70 percent on the examination.

**AV0661**

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**SPECIAL INSTRUCTIONS**

This correspondence course is the first in a four-part series. You must complete Part I--Survival Elements, Psychological Aspects, and

survival Medicine (AV 0661) before starting Parts II, III, and IV.  
You may, however, complete these parts in any order.

AV 0662 Protection From the Environment

AV 0663 Sustenance

AV 0664 Direction Finding, Signaling, and Recovery

## LESSON 1. SURVIVAL ELEMENTS

TASK: 9103.01-0003, Adopt the Code of Conduct as a Behavior Guide For Survival.

OBJECTIVE: You will be able to describe the mission of surviving, conditions affecting survival, and the survivor's needs.

CONDITION: You may use the lesson text and references to complete the review exercise.

STANDARD: You should answer correctly at least 8 of 10 review exercise questions.

CREDIT HOUR: 1.

REFERENCES: ARs 95-17 (May 84), 350-30 (Dec 85), 525-90 (Nov 71, with changes 1 and 2); AFM 64-5 (Sep 85); FMs 1-302 (Sep 83, with change 1), 20-150 (Jul 73, with changes 1 through 5), 21-76 (Mar 86); and DOD Directive 1300.7 (Dec 84).

### LESSON TEXT

#### 1. GENERAL

a. An ejection sequence, a bailout, or crash landing ends one mission for the crew but starts another--to successfully return from a survival situation. Are they prepared? Can they handle the new mission, not knowing what it entails? Unfortunately, many aircrew members are not fully aware of their new mission or are not fully prepared to carry it out. All instructors teaching aircrew survival must prepare the aircrew member to face and successfully complete this new mission.

b. The moment an aircrew member leaves the aircraft and encounters a survival situation, the assigned mission involves two tasks. One task is to "return to friendly control without giving aid or comfort to the enemy," and the other is to "return early and in good physical and mental condition."

(1) On first impression "friendly control" seems to relate to a combat situation. Even in peacetime, however, the environment may be quite hostile. Imagine parachuting into the arctic when it's minus 40 degrees Fahrenheit ( $^{\circ}$ F). Would an aircrew member consider this friendly? No! If the aircraft is forced to crash-land in the desert where temperatures may soar above 120 $^{\circ}$ F, would this be agreeable? Hardly. The possibilities for encountering hostile conditions affecting human survival are endless. Crew members who egress an aircraft may confront situations difficult to endure.

(2) Giving aid or comfort to the enemy is directly related to a combat environment. This part of the mission may be most effectively fulfilled by following the Code of Conduct (Figure 1). Remember, the Code of Conduct is useful to a survivor at all times and in all situations. The moral obligations of this document apply to peacetime and wartime situations.

(3) The final phase of the mission is "to return early and in good physical and mental condition." A key factor in successfully completing this part of the mission may be the will to survive. This will is present, in varying degrees, in all human beings. Although successful survival is based on many factors, those who maintain this important attribute will increase their chance of success.

c. Surviving is extremely stressful and difficult. The survivor may be constantly faced with hazardous and difficult situations. The stresses, hardships, and hazards associated with a survival episode are caused by the cumulative effects of existing conditions. The survivor's mission forms the basis for identifying and organizing the major needs of a survivor.

d. The primary elements of the survivor's mission are: conditions affecting survival and survivor's needs and the means for surviving. These elements are covered in the following sections of this lesson.

## Section I. CONDITIONS AFFECTING SURVIVAL

### 2. BASIC CONDITIONS

Five basic conditions affect every survival situation (Figure 2). These conditions may vary in importance or degree of influence from one situation to another and from individual to individual. At the onset, these conditions can be considered to be neutral--being neither for nor against the survivor--and should be looked on as neither an advantage nor a disadvantage. The aircrew member may succumb to their effects--or use them to the best advantage. These conditions exist in each survival situation and have great bearing on the survivor's every need, decision, and action.

### 3. ENVIRONMENTAL CONDITIONS

Basic components of all environments can present special problems for the survivor. Each component can be used to the survivor's advantage. Knowledge of these conditions may very well contribute to the success of the survival mission. These basic conditions include--

a. Climate. Temperature, moisture, and wind are the basic climatic elements. Extreme cold or hot temperatures, complicated by moisture (rain, humidity, dew, and snow) or lack of moisture, and the possibility

of wind may have a life-threatening impact on the survivor's needs, decisions, and actions. The primary concern, resulting from the effects of climate, is the need for personal protection. Climatic conditions also have a significant impact on other aspects of survival, such as the availability of water and food, the need and ability to travel, recovery capabilities, and physical and psychological problems.

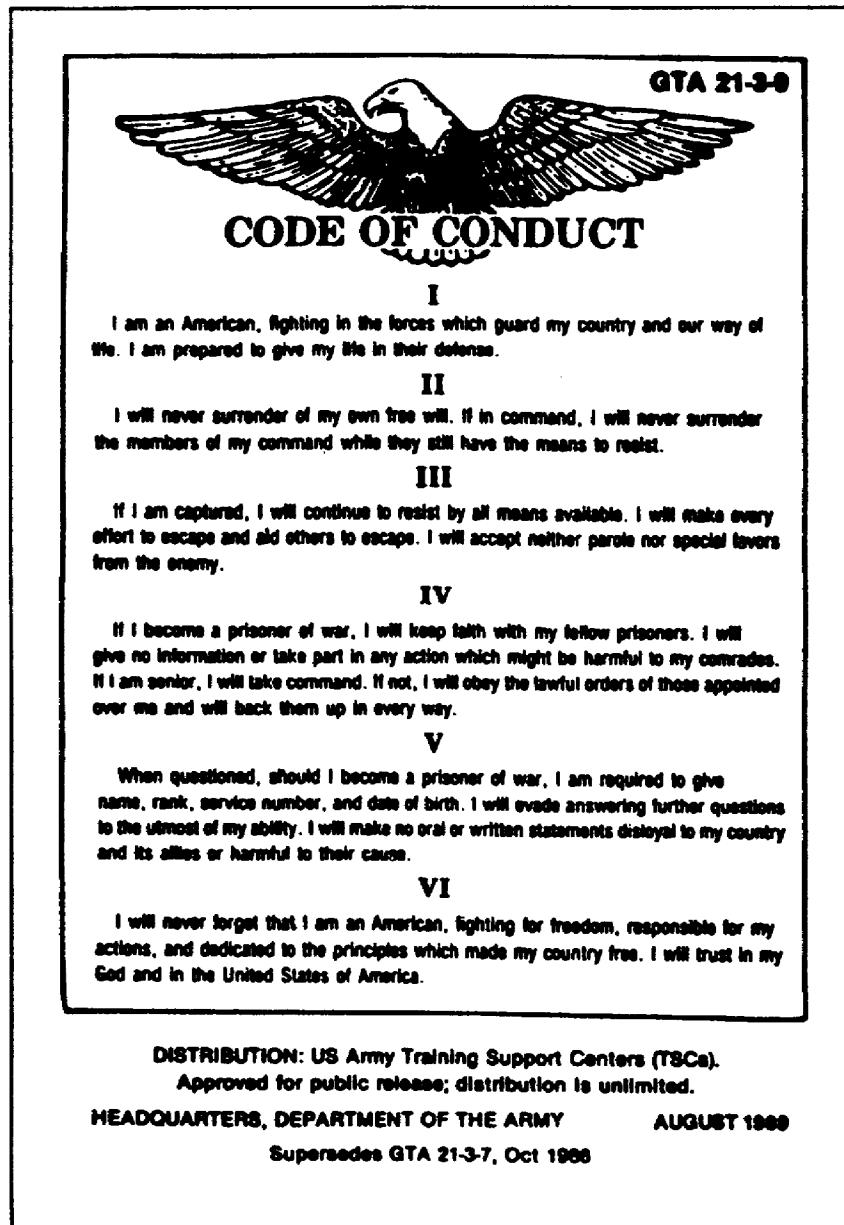
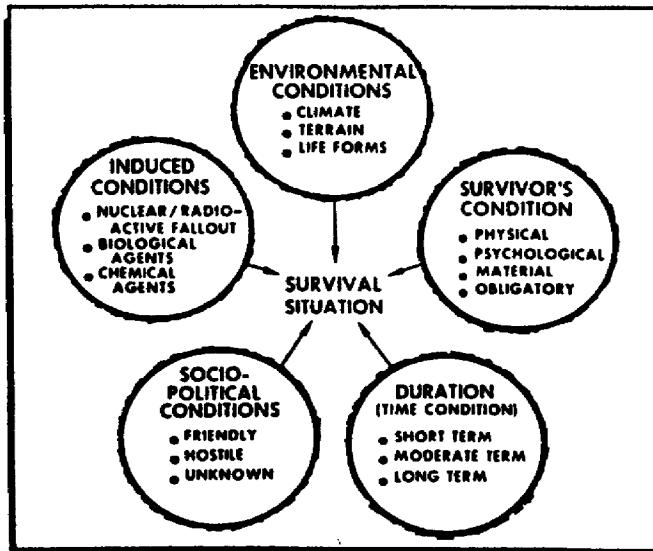


Figure 1. Code of Conduct



**Figure 2. Basic conditions that affect every survival situation.**

b. Terrain. Mountains, prairies, hills, and lowlands are only a few examples of the infinite variety of land forms that describe terrain. Each land form has a different effect on a survivor's needs, decisions, and actions. A survivor may find a combination of several terrain forms in a given situation. Existing terrain affects the survivor's needs and activities in such areas as travel, recovery, sustenance, and, to a lesser extent, personal protection. Depending on its form, terrain may afford security and concealment for an evader; cause travel to be easy or difficult; provide protection from cold, heat, moisture, wind, or nuclear, biological, chemical (NBC) conditions; or make surviving a seemingly impossible task.

c. Life Forms. For survival and survival training purposes, there are two basic life forms--plant life and animal life other than human. The special relationship and effects of people in the survival situation are covered separately. Geographic areas are often identified in terms of the abundance of life (or lack thereof).

**EXAMPLE:** The barren arctic or desert, primary or secondary forests, the tropical rain forest, and the polar ice cap produce images regarding the quantities of life forms. These examples have special meaning not only in terms of the hazards or needs they create, but also in how a survivor can use available life forms (Figure 3).

(1) Plant life. There are hundreds of thousands of different types and species of plant life. In some instances, geographic areas are identified by the dominant type plant life within that area. These areas include savannas, tundra, and deciduous forests. You may use many species of plant life as a source of food, water, shelter, and camouflage.

(2) Animal life. Birds, fish, insects, reptiles, mammals, and amphibians are life forms that directly affect a survivor. These creatures satisfy needs or pose hazards which must be taken into consideration.



Figure 3. Life forms.

#### 4. SURVIVOR'S CONDITION

The survivor's condition and the influence it has in each survival situation is often overlooked. Primary factors that constitute the survivor's condition can best be described by the four categories shown in Figure 4. Aircrew members must prepare themselves in each of these areas before each mission and be in a state of constant readiness for the possibility of a survival mission. Crew members must be aware of the role a survivor's condition plays before and during the survival situation.

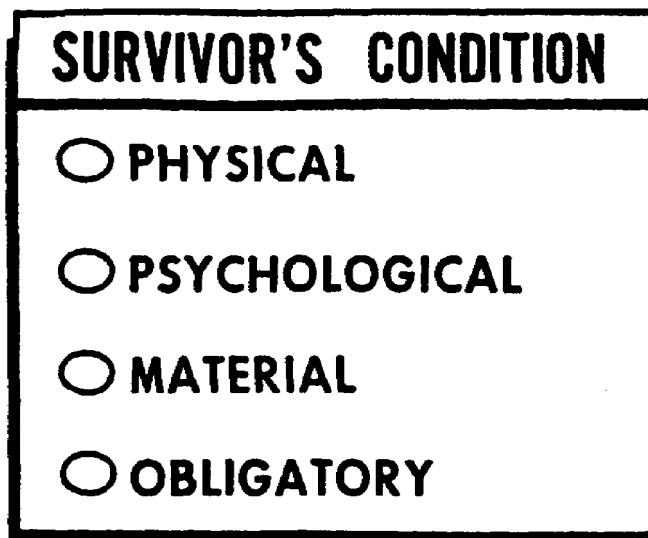


Figure 4. Survivor's condition.

a. Physical. Physical conditioning is one of the major factors affecting survivability. Aircrew members who maintain a high level of physical fitness are better prepared to face survival situations than those who do not. Good physical fitness will help the survivor to overcome such diverse hardships as temperature extremes, lack of rest, lack of food, and a shortage of water over an extended period of time.

b. Psychological. The survivors' psychological state greatly influences their ability to successfully return from a survival situation. Psychological effectiveness in a survival situation (including captivity) results from effectively coping with the factors listed in Figure 5.

FACTOR	DESCRIPTION
Initial shock	finding oneself in a survival situation following the stress of ejection, bailout, or crash landing
Pain	
Hunger	
Thirst	
Cold or heat	
Frustration	
Fatigue (including sleep deprivation)	
Isolation	includes forced (captivity) and extended duration of any episode
Insecurity	induced by anxiety and self-doubts
Loss of self-esteem	most often induced by coercive manipulation
Loss of self-determination	
Depression	mental "lows"

Figure 5. Coping factors.

(1) A survivor may experience emotional reactions during a survival episode due to the previously stated factors, previous life experiences (including training), and the survivor's psychological tendencies. Emotional reactions commonly occurring in survival situations (including captivity) are listed in Figure 6.

<b>Loneliness</b>
<b>Boredom (sometimes combined with loneliness)</b>
<b>Impatience</b>
<b>Dependency</b>
<b>Humiliation</b>
<b>Resentment</b>
<b>Hate</b>
<b>Anger (sometimes included as a subelement of hate)</b>
<b>Panic</b>
<b>Anxiety</b>
<b>Fear (often included as a part of panic or anxiety)</b>

**Figure 6. Emotional reactions.**

(2) Psychologically, survival situations may be divided into crisis and coping phases. The initial crisis period occurs at the onset of the survival situation. During this period, thinking as well as emotional control may be disorganized. Judgment is impaired and behavior may be irrational (possibly to the point of panic). Once the initial crisis is under control, the coping phase begins, and the survivor is able to respond positively to the situation. Crisis periods may well recur, especially during extended situations (captivity). A survivor must strive to control the situation if unable to avoid it.

(3) The most important psychological tool that affects the outcome of a survival situation is the will to survive. Without it, the survivor is surely doomed to failure. In other words, a strong will best assures survival.

c. Material. At the beginning of a survival situation, clothing and equipment in the aircrew member's possession, the contents of available survival kits (Appendices A and B), and salvageable resources from the parachute or aircraft are the survivor's total material assets. Adequate permission preparations are required and must be stressed during training. Once the survival episode has started, give special attention to the use, care, and storage of all materials to ensure they continue to be serviceable and available. Clothing and equipment should be selectively augmented with improvised items. Clothing appropriate to anticipated environmental conditions (on the ground) should be worn or carried as long as aircraft space and the mission permit. Equipment available to a survivor affects all needs, actions, and decisions. Therefore, the survivor's ability to improvise may provide a way to meet some of his needs.

d. Legal and Moral Obligations. Whether in peacetime or combat, the survivor's responsibilities as a member of the military service continue. Legal obligations are expressly identified in the rules of the Geneva

convention, Uniform Code of Military Justice (UCMJ), and Army regulations and policies. Moral obligations are expressed in the Code of Conduct (Figure 1).

(1) Other responsibilities influence behavior and the will to survive during survival situations. Examples include feelings of obligation or responsibilities to self, family, and spiritual beliefs.

(2) A survivor's perception of responsibilities influences survival needs and affects his psychological state during and after the survival situation. These perceptions are reconciled either consciously through rational thought or subconsciously through attitude changes. Training specifically structured to foster and maintain positive attitudes provides a key asset to survival.

## 5. TIME CONDITION (DURATION)

The duration of the survival episode has a major effect on the aircrew member's needs. Every decision and action is driven, in part, by an assessment of when recovery or return is probable. Air superiority, rescue capabilities, distances involved, climatic conditions, ability to locate the survivor, or captivity are major factors that directly influence the duration (time condition) of the survival episode. A survivor can never be certain that rescue is imminent.

## 6. SOCIOPOLITICAL CONDITION

The people a survivor contacts, their social customs, cultural heritage, and political attitudes affect the survivor's status. Warfare is one type of sociopolitical condition, and people of different cultures are another. Because of these differences, the interpersonal relationship between the survivor and any people with whom contact is established is crucial to survival. To a survivor, the attitude of the people contacted is either friendly, hostile, or unknown.

a. Friendly People. The survivor who comes into contact with friendly people, or at least those willing (to some degree) to provide aid, is fortunate. Immediate return to home, family, or home station, however, may be delayed. When in direct association with even the friendliest people, it is essential to maintain their friendship. These people may be of a completely different culture in which a commonplace American habit may be a gross and serious insult. In other instances, the friendly people may be active insurgents in their country and constantly in fear of discovery. Every survivor action, in these instances, must be appropriate and acceptable to ensure continued assistance.

b. Hostile People. A state of war need not exist for a survivor to encounter hostility in people. With few exceptions, any contact with hostile people must be avoided. If captured, regardless of the political or social reasons, the survivor must make all efforts to adhere to the Code of Conduct and the legal obligations of the UCMJ, the rules of the Geneva convention, and Army policy.

c. Unknown People. The survivor should consider all factors before contacting unknown people. Some primitive cultures and closed societies in which outsiders are considered a threat still exist. In other areas of the world, differing political and social attitudes can place a survivor at risk when contacting an unknown people.

## 7. INDUCED CONDITIONS

Any form of warlike activity results in induced conditions. Three comparatively new induced conditions may occur during combat operations. Nuclear warfare and the resultant residual radiation, biological warfare, and chemical warfare (also known as NBC) create life-threatening conditions from which a survivor needs immediate protection. The longevity of NBC conditions further complicates a survivor's other needs, decisions, and actions.

# Section II. THE SURVIVOR'S NEEDS AND MEANS FOR SURVIVING

## 8. BASIC AND ADDITIONAL NEEDS

The three fundamental goals or duties of a survivor, when categorized into organizational components, are to maintain life, maintain honor, and return. These three goals may be further divided into five basic and three additional needs. In a noncombatant situation, these basic needs include health, travel, sustenance, communications (signaling for recovery), and personal protection. During combat, three additional needs must be fulfilled-evasion; if captured, resistance; and escape. Meeting the individual's needs during the survival episode is essential to achieving the survivor's fundamental goals. Survival training instructors and formal survival training courses provide training in the skills, knowledge, and attitudes necessary for an aircrew member to successfully perform fundamental survival duties. However, the decisions survivors make and the actions they take in order to survive determine their prognosis for survival.

## 9. MAINTAINING LIFE

In any situation, there are three elementary needs of a survivor. These needs, categorized as the integral components of maintaining life, are personal protection, sustenance, and physical and psychological health.

a. Personal Protection. The human body is comparatively fragile. Without protection, the effects of environmental conditions (climate, terrain, and life forms) and of induced conditions (radiological, biological, and chemical agents) may be fatal. The survivor's primary defenses against the effects of the environment are clothing, equipment, shelter, and fire. Additionally, clothing, equipment, and shelter are the primary defenses against some of the effects of induced conditions (Figure 7).

(1) The need for adequate clothing and its proper care and use cannot be overemphasized. The human body's tolerance for temperature extremes is very limited. However, its ability to regulate heating and cooling is extraordinary. The availability of clothing and its proper use is extremely important to a survivor while using these abilities of the body. Clothing also provides excellent protection against the external effects of alpha and beta radiation and may serve as a shield against some chemical or biological agents.

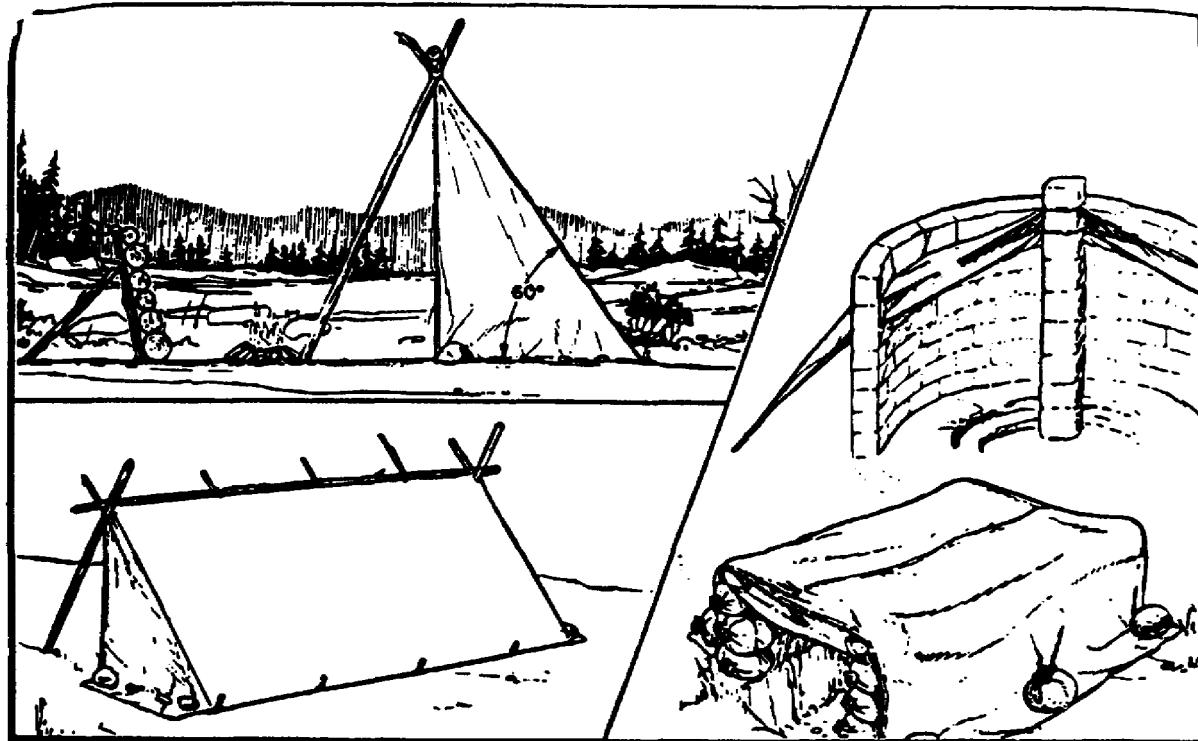
(2) Survival equipment, designed to aid survivors throughout their situation, must be cared for to maintain its effectiveness. Items found in a survival kit or aircraft can be used to help satisfy the eight basic needs. Quite often, however, a survivor must improvise to overcome an equipment shortage or deficiency.



Figure 7. Personal protection.

NOTE: Information regarding survival kits and the survival vest is in Appendixes A and B.

(3) The survivor's requirement for adequate shelter is based on the need to avoid specific environmental extremes. In areas that are warm and dry, the survivor should seek natural and man-made shelter types that offer protection from the effects of heat and direct sunlight. In cold climates, shelter requirements are completely different. In this climate, selecting a shelter design that enables the survivor to retain life-saving body heat becomes the primary concern. In cold climates, the criticality of a shelter is measured in minutes. Rest is of little immediate concern in this environment. Similarly, in areas of residual radiation, the criticality of a shelter is also measured in minutes. The duration of the survival episode influences the selection of a shelter design and building materials. Ideally, the survivor will select a shelter design and building technique that requires the least amount of energy and time to construct (Figure 8).

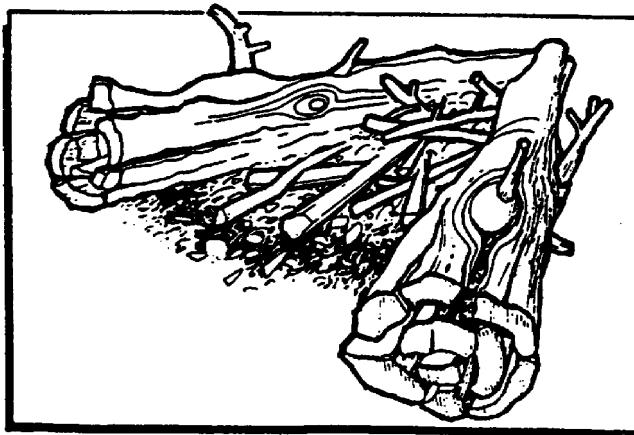


**Figure 8. Shelters.**

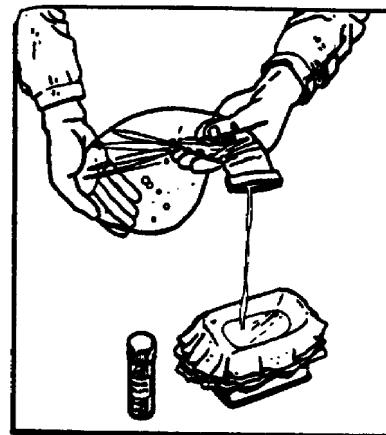
(4) Fire also serves many survivor needs. It purifies water, cooks and preserves food, is used to signal, and provides a source of heat to warm the body and dry clothing (Figure 9).

b. Sustenance. Survivors need water and food to maintain normal body functions and to provide strength, energy, and endurance to overcome

the physical stresses of survival. They must be constantly aware of the need for water (Figure 10). The need for food, however, receives little attention during the first hours of a survival situation. During the first two or three days, though, hunger becomes a nagging aggravation which can be overcome.



**Figure 9. "V" Fire.**



**Figure 10. Water.**

(1) The first major food crisis occurs when your physical capabilities are diminished. Signs include loss of energy, stamina, and strength.

(2) The second major food crisis is more insidious. A marked increase in irritability and other attitudes may occur as the starvation process continues. Give early and continuous attention to obtaining and using any and all available food. Since most people have food preferences, the natural tendency to avoid certain types of food is a major problem that must be overcome early. The starvation process ultimately overcomes all food aversions. A successful survivor overcomes these aversions before physical or psychological deterioration sets in (Figure 11).

c. Health (Physical and Psychological). You must be your own nurse, doctor, corpsman, psychologist, and cheerleader. Self-aid is your sole recourse.

(1) Prevention. The need for preventive medicine and safety cannot be overemphasized. Attention to sanitation and personal hygiene is a major factor in preventing physical, morale, and attitudinal problems.

(a) The need for cleanliness in treating injuries and illness is self-evident. The prisoner of war (PW) who uses maggots to eat away rotting flesh caused by infection is a dramatic example. Prevention is preferred over such drastic procedures.



**Figure 11. Food.**

(b) Safety must be foremost in the mind of the survivor; carelessness is caused by bad luck, ignorance, poor judgment, or all three. One miscalculation with a knife or an axe can result in a self-inflicted injury or death.

(2) Self-aid.

(a) Injuries frequently occur during bailout, ditching, or crash landing. Other postegress factors may also cause injury. In the event of an injury, the survivor's existence may depend on his ability to perform self-aid. In many instances, common first aid procedures suffice; in others, more primitive techniques are required (Figure 12).

(b) Illness and the need to treat it is more commonly associated with long-term situations, such as an extended evasion episode or captivity. When preventive techniques have failed, the survivor must treat disease symptoms in the absence of professional medical care.

(3) Psychological health. Perhaps the survivor's greatest need is the need for emotional stability and a positive, optimistic attitude. An individual's ability to cope with psychological stresses enhance successful survival. Optimism, determination, dedication, and humor, as well as many other psychological attributes, are all helpful to a survivor in overcoming psychological stresses (Figure 13).

## 10. MAINTAINING HONOR

A survivor may experience elementary needs during combat survival situations. These needs, categorized as integral components of maintaining honor, include--

a. Avoidance.

(1) Evasion is one of the most difficult and hazardous situations a survivor faces. No matter how difficult and hazardous evasion may be though, captivity is always worse.

(2) During evasion you have two fundamental tasks. The first is to use concealment techniques. The second is to use evasive movement techniques. Effective use of camouflage is common to both.



Figure 12. Self-aid.

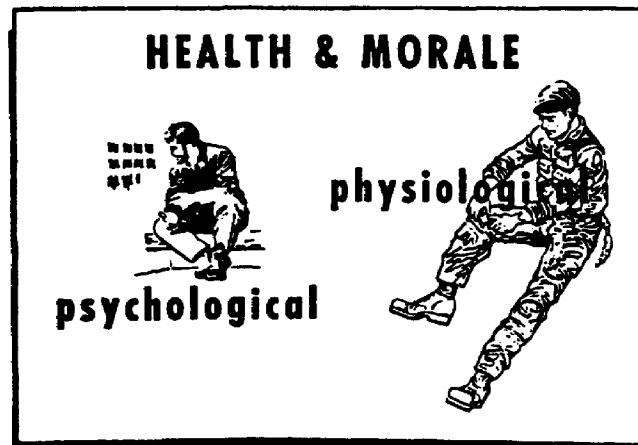


Figure 13. Health and morale.

(a) Hiding oneself and all signs of presence are the evader's greatest needs. Experience indicates that the survivor who uses effective concealment techniques has a better chance of evading capture. Capture results most frequently when the evader is moving.

(b) The evader's need to move depends on a variety of needs such as food, water, recovery, better shelter, and so on. Evasion movement is more successful when using proven techniques.

b. Resistance (if Captured). The PW has a legal and moral obligation to resist the enemy. Resistance involves two distinctly different behaviors. The first form involves complying only with those directives that are legal and are authorized requirements. The second form of resistance involves disrupting enemy activity, subtle harassment, and tying up guards who could be used on the front lines.

c. Escape (When Possible and Authorized). Escape is neither easy nor without danger. The Code of Conduct states a survivor should make every effort to escape and to aid others to escape.

## 11. RETURNING

The need to return is satisfied by successfully completing one or all of the following basic tasks confronting the survivor:

a. Aiding With Recovery. For survivors or evaders to effectively aid in recovery, they must be able to make their position and the situation on the ground known. This is done either visually, electronically, or both (Figure 14).

(1) Electronic signaling covers a wide spectrum of techniques. As problems such as security and safety during combat become significant factors, procedures for using electronic signaling to facilitate recovery become increasingly complex.

(2) The primary technique for attracting attention and pinpointing an exact location for rescuers is visual signaling. Simple messages or information may also be transmitted with visual signals.

b. Traveling On Land. A survivor may need to move on land for a variety of reasons ranging from going for water to attempting to walk out of the situation. In any survival episode, the survivor must weigh the need to travel against his capabilities, safety, or both (Figure 15). Factors to consider may include those listed below.

(1) The ability to walk or traverse existing terrain. In a non-survival situation, a twisted or sprained ankle is an inconvenience accompanied by some temporary pain and restricted activity. A survivor who loses his mobility (because of injury) to obtain food, water, and shelter faces death.

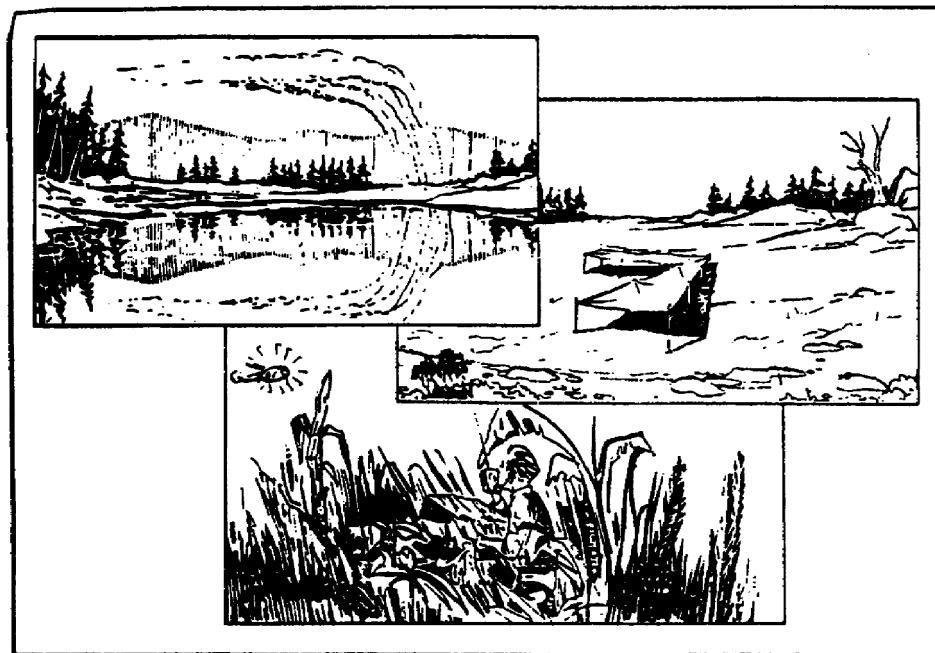


Figure 14. Recovery.

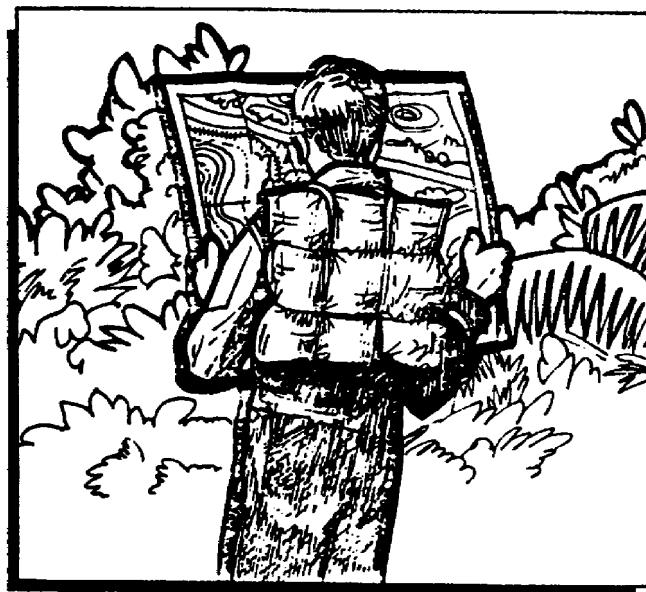
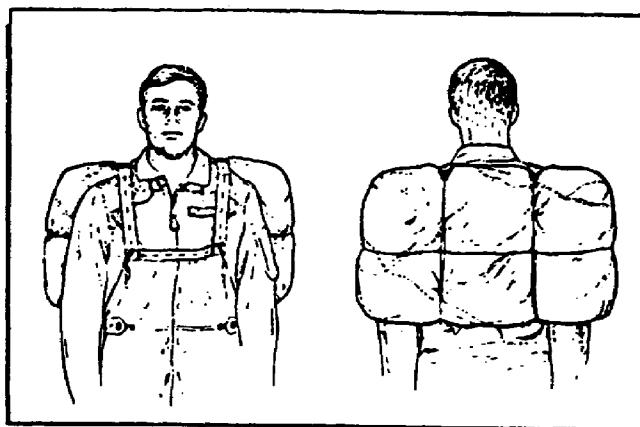


Figure 15. Travel.

(2) The need to transport personal possessions (burden carrying). There are numerous documented instances of survivors abandoning equipment and clothing simply because carrying it was a bother. Later,

the materials were not available when needed to save a life or limb or to aid in a rescue. Burden carrying need not be difficult or physically stressful. There are many simple ways for a survivor to carry the necessities of life (Figure 16).



**Figure 16. Burden carrying.**

(3) The ability to determine present position. Maps, compasses, star charts, Weems plotters, and such permit accurately determining position during extended travel. Yet, the knowledgeable, skillful, and alert survivor can do well without a full complement of these aids. Logic, constant awareness, and training in nature's clues to navigation may allow a survivor to determine his general location even in the absence of detailed navigation aids.

(4) Restrictions or limitations to select and maintain a course of travel. The tools used in determining position are also used to maintain a course of travel. A straight line course to a destination is usually the simplest, but it may not always be the best course for travel. Travel courses may need to be varied for diverse reasons. Such reasons include getting food or water, enhancing covert travels, or avoiding hazardous or impassable obstacles or terrain. Careful planning and route selection are essential before and during travel.

c. Traveling On Water. Two differing circumstances may require survivors to travel on water. First, those who crash-land or parachute into the open sea are confronted with one type of situation. Second, survivors who find a river or stream leading in a desirable direction are faced with a different situation. In each instance, however, the common element is to stay afloat.

(1) The survivor's initial problems on the open sea are often directly related to the winds and size of the waves. Simply getting into a liferaft and staying there are often very difficult tasks. On the open

sea, winds and ocean currents have a significant effect on the direction of travel. As the survivor comes closer to shore, the direction in which the tide is flowing also becomes a factor.

(2) When compared to traveling overland, there are advantages and disadvantages to using streams and rivers. Floating with the current is far less difficult and time consuming. Food and water are also found in greater abundance near bodies of water. The hazards associated with river or stream travel are numerous, especially during a time of war. The most serious hazard is the prospect of drowning. Actual evasion case histories reveal that the likelihood of being killed or captured is much greater near a moving body of water. You must remember that the enemy, like yourself, also travels using the path of least resistance. The need to examine the advantages and disadvantages of this form of travel cannot be overemphasized.

REVIEW EXERCISE

REQUIREMENT: Solve the following by selecting the correct answers:

1. A key factor that effects your ability to return to friendly control early and in good physical and mental condition is
  - A. knowledge.
  - B. the will to survive.
  - C. a positive attitude.
  - D. physical conditioning.
  
2. The three goals or duties of a survivor are to maintain life, maintain honor, and
  - A. return.
  - B. survive.
  - C. resist the enemy if captured.
  - D. fight the enemy whenever and wherever possible.
  
3. The primary climatic elements that exist in a survival environment are temperature, wind, and
  - A. rain.
  - B. snow.
  - C. moisture.
  - D. humidity.
  
4. The primary factors that constitute the survivor's condition are physical, psychological, material, and
  - A. mental conditioning.
  - B. physical conditioning.
  - C. legal and moral obligations.
  - D. availability of survival materials.
  
5. Every decision and action of the survivor is driven by an assessment of
  - A. the possibility of recovery.
  - B. when recovery will take place.
  - C. the location of food and water.
  - D. the probability of enemy capture.

6. Quickly establishing a survival shelter is most critical in an area of residual radiation and in

- A. a dry climate.
- B. a wet environment.
- C. a tropical environment.
- D. an extremely cold environment.

7. In situations requiring first aid, what is your sole resource?

- A. self-aid
- B. survival vest
- C. local medical facility
- D. organic healing techniques

8. Evasion in a survival environment depends on two fundamental tasks. One is to use concealment techniques. What is the other?

- A. know your enemy
- B. blend with the surroundings
- C. use evasive movement techniques
- D. recognize a threatening situation before you are detected

9. What is the primary technique for attracting attention and pinpointing an exact location for rescuers?

- A. mirrors
- B. panel markers
- C. signal flares
- D. visual signals

REVIEW EXERCISE SOLUTIONS

1.      B. (paragraph 1b(3))
2.      A. (paragraph 8)
3.      C. (paragraph 6a)
4.      C. (paragraph 4d)
5.      B. (paragraph 5)
6.      D. (paragraph 9a(3))
7.      A. (paragraph 9a)
8.      C. (paragraph 10a(2))
9.      D. (paragraph 11a(2))

## LESSON 2. PSYCHOLOGICAL ASPECTS OF SURVIVAL

TASKS: 9103.01-0002, Maintain Physical Capability to Survive.  
9103.01-0003, Adopt the Code of Conduct as a Behavior Guide  
For Survival.

OBJECTIVE: You will be able to describe the psychological aspects of survival to include contributing factors, emotional reactions, and the will to survive.

CONDITIONS: You may use the lesson text and references to complete the review exercise.

STANDARD: You should answer correctly at least five of seven review exercise questions.

REFERENCES: ARs 95-17 (May 84), 350-30 (Dec 85), 525-90 (Nov 71, with changes 1 and 2); AFM 64-5 (Sep 85); FMs 1-302 (Sep 83, with change 1), 20-150 (Jul 73, with changes 1 through 5), 21-76 (Mar 86); and DOD Directive 1300.7 (Dec 84).

### LESSON TEXT

#### 1. GENERAL

a. Aircrew members in a survival situation must recognize that coping with the psychological aspects of survival are at least as important as handling the environmental factors. In virtually any survival situation, the aircrew will be in an environment that can support human life. The survivors' problems are compounded because they never really expected to bail out or crash-land in the jungle, over the ocean, or anywhere. No matter how well prepared, aircrews probably will never completely convince themselves that it can happen to them. However, records show it can happen. Before aircrew members learn about the physical aspects of survival, they must first understand that psychological problems may occur and that solutions must be found if the survival situation is to reach a successful conclusion.

b. Survivors may depend more on their emotional reactions to a situation than on weather, terrain, the enemy, nature of the in-flight emergency, and so forth. Whether they will panic from fear or use fear as a stimulant for greater sharpness depends more on the survivor's reactions to the situation than on the situation. Some of the most common reactions to stress are discussed in section II.

c. All psychological factors may be overcome by survivors if they can recognize the problem, work out alternative solutions, decide on an appropriate course of action, take action, and evaluate the results. Perhaps the most difficult step is deciding on an appropriate course of action. Survivors may face either one or several psychological problems. Psychological problems are quite dangerous and must be effectively controlled or countered for survival to continue.

d. Survivors do not choose or welcome their fate and would escape it if they could. They are trapped in a world of seemingly total domination--a world hostile to life and any sign of dignity or resistance. The survival mission is not an easy one, but it is one in which success can be achieved. Certain concepts and ideas can help an aircrew member return. Having the will to survive is what it's all about.

## Section I. CONTRIBUTING FACTORS

### 2. STRESS

a. Emotional aspects associated with survival must be completely understood just as survival conditions and equipment. An important factor bearing on success or failure in a survival situation is the individual's psychological state. Maintaining an even outlook depends on the individual's ability to cope with many factors. Some factors include--

- (1) Understanding how various physiological and emotional signs, feelings, and expressions affect bodily needs and mental attitude.
- (2) Managing physical and emotional reactions to stressful situations.
- (3) Knowing individual psychological and physical tolerance limits.
- (4) Exerting a positive influence on companions.

b. Everyone's biological mechanisms aid in adapting to stress. Bodily changes resulting from fear and anger tend to increase alertness and provide extra energy to either run away or fight. These and other mechanisms can hinder a person under survival conditions. For instance, a survivor in a raft could cast aside reason and drink sea water to quench a thirst, or evaders in enemy territory, driven by hunger pangs, could expose themselves to capture when searching for food. These examples illustrate how normal reactions to stress could create problems for a survivor.

c. Two of the gravest threats to successful survival are concessions to comfort and apathy. These represent attitudes that must be avoided. To survive, a person must focus planning and effort on fundamental needs.

(1) Comfort. Many people consider comfort their greatest need, yet it is not essential to human survival. Survivors must value life more than comfort and be willing to tolerate heat, dirt, pain, hunger, itching, and any other discomfort. Recognizing discomfort as temporary helps survivors concentrate on effective action.

(2) Apathy. As the will to keep trying lessens, drowsiness, mental numbness, and indifference result in apathy. This usually builds slowly, but ultimately it takes over and leaves a survivor helpless. Physical factors also contribute to apathy. Fatigue, weakness, injury, loss of body fluids (dehydration), or exhaustion from prolonged exposure to the elements are all conditions that can contribute to apathy. Proper planning and sound decisions can help a survivor avoid these conditions. Finally, survivors must watch for signs of apathy in their companions and help prevent it. Signs of impending apathy include quietness, resignation, lack of communication, loss of appetite, and withdrawal from the group. Preventive measures include activity and maintaining group morale by planning and getting the organized participation of all members.

d. Many common stresses cause reactions that can be recognized and dealt with appropriately in survival situations. A survivor must understand that stresses and reactions often occur at the same time. Although survivors face many stresses, the following common stresses occur in virtually all survival situations: pain, hunger, fatigue, frustration, depression, cold and heat, isolation, insecurity, sleep deprivation, loss of self-esteem, thirst and dehydration, and loss of self-determination.

### 3. PAIN

a. Pain, like fever, is a warning signal calling attention to an injury or damage to some part of the body. It is discomforting but is not, in itself, harmful or dangerous. Pain can be controlled, and in an extremely grave situation, survival must take priority over giving in to pain (Figure 17).

b. The biological function of pain is to protect an injured part by warning the individual to rest it or avoid using it. In a survival situation, normal pain warnings may have to be ignored in order to meet more critical needs. People have been known to complete a fight with a fractured hand, to run on a fractured or sprained ankle, to land an aircraft despite severely burned hands, and to ignore pain during periods of intense concentration and determined effort. Concentration and intense effort can actually stop or reduce the feeling of pain.

c. A survivor must understand the following facts about pain. Despite pain, a survivor can move in order to live. Pain can be reduced by understanding its source and nature; recognizing it as a discomfort to be tolerated; concentrating on necessities, such as thinking, planning, and keeping busy; and developing confidence and self-respect. When personal goals (maintaining life, honor, and returning) are valued highly enough, a survivor can tolerate almost anything.



**Figure 17. Pain.**

#### 4. THIRST AND DEHYDRATION

a. The lack of water and its accompanying problems of thirst and dehydration are among the most critical problems facing survivors. Thirst, like fear and pain, can be tolerated if the will to carry on, supported by calm, purposeful activity, is strong. Although thirst indicates the body's need for water, it does not indicate how much. If a person drinks only enough to satisfy his thirst, it is still possible to slowly dehydrate. Preventing thirst and the more debilitating dehydration is possible if survivors drink plenty of water any time it is available, especially when eating (Figure 18).

b. When the body's water balance is not maintained, thirst and discomfort result. Ultimately, a water imbalance results in dehydration and death. The need for water will increase if the person is sick, is fearful, or expends a great deal of energy.

c. Dehydration decreases the body's efficiency or ability to function. Minor degrees of dehydration may not have a noticeable affect on a survivor's performance, but as it becomes more severe, body functions become increasingly impaired. Slight dehydration and thirst can also cause irrational behavior. One survivor described it as follows:

"The next thing I remember was being awakened by an unforgettable sensation of thirst. I began to move about aimlessly and finally found a pool of water."

"We finally found water. In the water were two dead deer with horns locked.

We went down to the water and drank away. It was the best damned drink of water I ever had in my life. I didn't taste the stench of the deer at all." While prevention is the best way to avoid dehydration, virtually any degree is reversible simply by drinking water.

##### 5. COLD AND HEAT

The normal human body temperature is 98.6 degrees Fahrenheit ( $^{\circ}$ F). People are known to have survived with body temperatures  $20^{\circ}$ F below normal, and up to  $8^{\circ}$ F above normal. Any deviation, even as little as 1 or 2 degrees, reduces efficiency.

a. Cold, serious stress even in mild degrees, lowers efficiency. Extreme cold numbs the mind and dulls the will to do anything except get warm. Cold numbs the body by lowering the flow of blood to the extremities; this results in sleepiness. Survivors have endured prolonged cold and dampness through food, shelter, exercise, and proper hygienic procedures. When flying in cold weather areas, wearing proper clothing

and having the proper climatic survival equipment are essential to enhance survivability. One survivor described cold and its effect in this manner.



Figure 18. Thirst.

"Because of the cold water, my energy was going rapidly and all I could do was to hook my left arm over one side of the raft, hang on, and watch the low flying planes as they buzzed me. . . . As time progressed, the numbing increased . . . and even seemed to impair my thinking."

Another survivor remembered survival training and acted accordingly.

"About this time, my feet began getting cold. I remembered part of the briefing I had received about feet freezing, so I immediately took action. I thought about my shoes and, with my jack knife, cut off the bottom of my Mark II immersion suit and put them over my shoes. My feet immediately felt warmer, and the rubber feet of the immersion suit kept the soles of my shoes dry."

b. Just as numbness is the principal symptom of cold, weakness is the principal symptom of heat. Most people can adjust to high temperatures, whether in the hold of a ship or in a harvest field on the Kansas prairie. It may take from two days to a week before circulation, breathing, heart action, and sweat glands are all adjusted to a hot climate. Heat stress also accentuates dehydration. In addition to the problem of water, there are many other sources of discomfort and impaired efficiency directly attributable to heat or environmental conditions in hot climates. Extreme temperature changes, from extremely hot days to very cold nights, are experienced in desert and plains areas. Proper use of clothing and shelters can decrease the adverse effects of such extremes (Figure 19).



Figure 19. Heat.

c. Bright sun has a tremendous effect on the eyes and exposed skin. Dark glasses or improvised eye protectors are required when confronted with direct sunlight or rays reflecting off the terrain. Previous sun-tanning provides little protection; protective clothing is important.

d. Blowing wind, in hot summer, has been reported to get on some survivors' nerves. Wind constitutes an additional source of discomfort and difficulty in desert areas when it carries particles of sand and dirt. Protection against sand and dirt can be provided by cutting small slits in a piece of cloth for vision and tying it around the head.

e. Acute fear has been experienced among survivors in sandstorms and snowstorms. This results from the terrific impact of the storm and its obliteration of landmarks showing direction of travel. Finding or improving a shelter for protection from the storm itself is important.

f. Loss of moisture, drying of the mouth and mucous membranes, and accelerated dehydration can be caused by talking or breathing through the mouth. Survivors must learn to keep their mouths shut in desert winds and cold weather.

g. Mirages and illusions of many kinds are common in desert areas. These illusions not only distort visual perception but sometimes account for serious incidents. In the desert, distances are usually greater than they appear, and under certain conditions, mirages obstruct accurate vision. Inverted reflections are common occurrences.

## 6. HUNGER

A considerable amount of edible material (which survivors may not initially regard as food) may be available under survival conditions. Hunger and semistarvation are more commonly experienced among survivors than thirst and dehydration. Research has revealed no evidence of permanent damage nor any decrease in mental efficiency from short periods of total fasting (Figure 20). The prolonged and rigorous Minnesota semistarvation studies during World War II revealed the behavioral changes reflected in Figure 21.

a. Frequently, in the excitement of some survival, evasion, and escape episodes, hunger is forgotten. Survivors have gone for considerable lengths of time without food or awareness of hunger pains. Make every effort to procure and consume food to reduce the stresses brought on by food deprivation. The physical and psychological effects described are reversed when food and a protective environment are restored. Returning to normal is slow, and the time necessary for the return increases with the severity of starvation. If food deprivation is complete and only water is ingested, hunger pangs disappear in a few days; even then depression and irritability occur. The individual tendency is still to search for food to prevent starvation. Such efforts might continue as long as strength and self-control permit. When the food supply is limited, even strong friendships are threatened.

b. Food aversion may result in hunger. Adverse group opinion may discourage those who might try foods unfamiliar to them. In some groups, the barrier would be broken by someone eating the particular food rather than starving. The solitary individual has only personal prejudices to overcome and often tries strange foods.

c. Controlling hunger during a survival situation is relatively easy if you can adjust to discomfort and adapt to primitive conditions. The following person would rather survive than be fussy:

"Some people would almost starve before eating the food. There was soup made of lamb's head with the lamb's eyes floating around in it. . . . When there was a new prisoner, I would try to find a seat next to him so I could eat the food he refused."



Figure 20. Hunger.

DULLNESS AND BOREDOM	MOODINESS (REACTION OF RESIGNATION)
TIRED AND WEAK FEELINGS	DISLIKE BEING TOUCHED OR CARESSSED IN ANY WAY
LACK OF A SENSE OF HUMOR	DULL EMOTIONAL RESPONSES (FEAR, SHAME, LOVE)
LACK OF SPONTANEOUS ACTIVITY	DOMINANCE OF THE HUNGER DRIVE OVER OTHER DRIVES
QUICK SUSCEPTIBILITY TO COLD	
INABILITY TO DO PHYSICAL TASKS	
LIMITED PATIENCE AND SELF-CONTROL	
LACK OF INTEREST IN OTHERS (APATHY)	

Figure 21. Semistarvation behavioral changes.

## 7. FRUSTRATION

a. Frustration occurs when a person's efforts are stopped either by obstacles blocking progress toward a goal or by not having a realistic goal. It also occurs if the feeling of self-worth or self-respect is lost (Figure 22).

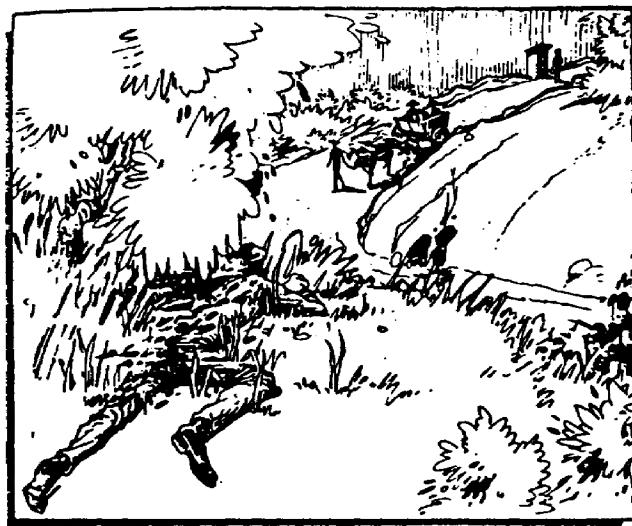


Figure 22. Frustration.

b. A wide range of environmental and internal obstacles can lead to frustration. This often creates anger and is accompanied by a tendency to attack and remove the obstacles to goals. Frustration must be controlled by channeling energies into a positive and worthwhile obtainable goal. The survivor should complete the easier tasks before attempting more challenging ones. This relieves frustration and instills self-confidence.

## 8. FATIGUE

In a survival situation, a survivor must continually cope with fatigue and avoid the accompanying strain and loss of efficiency. A survivor must be aware of the dangers of overexertion. In many cases, a survivor may already be experiencing strain and reduced efficiency as a result of other stresses. A survivor must judge his capacity to walk, carry, lift, or do necessary work, and plan and act accordingly. During an emergency, considerable exertion may be necessary to cope with the situation. If an individual understands fatigue and the attitudes and feelings generated by various kinds of effort, that individual should be able to call on available energy reserves when needed (Figure 23).



**Figure 23. Fatigue.**

a. A survivor must avoid complete exhaustion; complete exhaustion may lead to physical and psychological changes. A survivor should be able to distinguish between exhaustion and being uncomfortably tired. Although a person should avoid working to complete exhaustion, in emergencies certain tasks must be done in spite of fatigue.

(1) Rest, a basic factor in recovering from fatigue, is also important in resisting further fatigue. Rest (following fatiguing effort) is essential and must be sufficient to permit complete recovery; otherwise, residual fatigue accumulates and longer rest periods are necessary to recover. During the early stages of fatigue, proper rest provides rapid recovery of muscular and mental fatigue. Sleep is the most complete form of rest available and is basic to recover from fatigue.

(2) Short rest breaks, during periods of extended stress, can improve total output. Rest breaks provide opportunities for partial recovery from fatigue and help reduce energy expenditure. They also increase efficiency by enabling a person to take maximum advantage of planned rest. Boredom is relieved by breaking up the uniformity and monotony of the tasks. As a result, rest periods increase morale and motivation.

(3) Survivors should rest before output starts declining. If rest breaks are longer, fewer may be required. When efforts are highly strenuous or monotonous, rest breaks should be more frequent. Those that provide relaxation are the most effective. In mental work, mild exercise may be more relaxing. When work is monotonous, changes in activity, conversation, and humor are effective relaxants. In deciding on the amount and frequency of rest periods, the loss of efficiency resulting from longer hours of effort must be weighed against the absolute requirements of the survival situation.

(4) Fatigue can be reduced by working "smarter." Practical ways include adjusting the pace of the effort (balancing the load, rate, and time period) and adjusting the technique of work. Walking at a normal rate is a more economical effort than fast walking. The way in which work is done has a great bearing on reducing fatigue. Economy of effort is most important. Rhythmic movements suited to the task are best.

(5) Cooperation, mutual group support, and competent leadership are important factors in maintaining group morale and efficiency. This reduces stress and fatigue. A survivor usually feels tired and weary before the physiological limit is reached. Feeling fatigued involves not only the physical reaction to effort, but also subtle changes in attitudes and motivation. Remember, a person has energy reserves to cope with an important emergency even when feeling very tired.

b. As in other stresses, even a moderate amount of fatigue reduces efficiency. To control fatigue, it is wise to observe a program of periodic rest. Because of the main objective--to establish contact with friendly forces--survivors may overestimate their strength and risk exhaustion. On the other hand, neither an isolated individual nor a group leader should underestimate the capacity of the individual or group on the basis of fatigue. The only sound basis for judgment must be gained from training and past experience. In training, a person should form an opinion of individual capacity based on actual experience. Likewise, a group leader must form an opinion of the capacities of fellow aircrew members. The group quoted below didn't think.

"By nightfall, we were completely bushed. . . . We decided to wrap ourselves in the chute instead of making a shelter. We were too tired even to build a fire. We just cut some pine boughs, rolled ourselves in the nylon and went to sleep. . . . and so, of course, it rained, and not lightly. We stood it until we were soaked, and then we struggled out and made a shelter. Since it was pitch dark, we didn't get the sags out of the canopy, so the water didn't all run off. A lot of it came through. Our hip and leg joints ached as though we had acute rheumatism. Being wet and cold accentuated the pain. We changed positions every ten minutes, after gritting our teeth to stay put that long."

#### 9. SLEEP DEPRIVATION

The effects of sleep loss are closely related to those of fatigue. Sleeping at unaccustomed times, under strange circumstances, or missing part or all of the accustomed amount of sleep cause a person to react by feeling weary, irritable, and emotionally tense and losing some efficiency. The extent of an individual's reaction depends on the amount of disturbance and other stress factors that may be present (Figure 24).



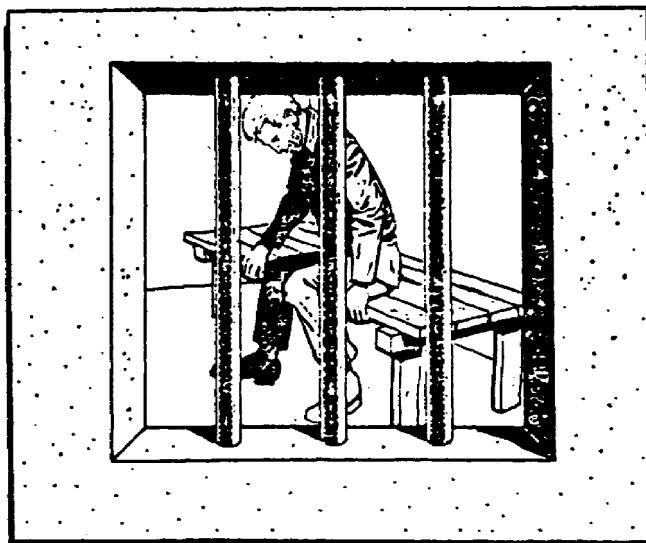
**Figure 24. Sleep deprivation.**

a. Strong motivation is one of the principal factors in helping to compensate for the impairing effects of sleep loss. Superior physical and mental conditioning, opportunities to rest, food and water, and companions help endure sleep deprivation. If a person is in reasonably good physical and mental condition, sleep deprivation can be endured five days or more without damage, although efficiency during the latter stages may be poor. A person must learn to get as much sleep and rest as possible. Restorative effects of sleep are felt even after catnaps. In some instances, survivors may need to stay awake. Movement, eating, drinking, activity, and conversation are ways a person can stimulate the body to stay awake.

b. When one is deprived of sleep, sleepiness usually comes in waves. A person may suddenly be sleepy immediately after feeling wide awake. The feeling soon passes, and the person is wide awake again until the next wave appears. As the duration of sleep deprivation increases, periods between waves of sleepiness become shorter. The need to sleep may be so strong after a long deprivation period that one becomes desperate and does careless or dangerous things in order to escape this stress.

#### 10. ISOLATION

Among the most severe survival stresses during isolation are when survivors experience loneliness, helplessness, and despair. People often take their associations with family, friends, military colleagues, and others for granted. Survivors soon begin to miss the daily interaction with others. These, like other stresses, can be conquered. Isolation can be controlled and overcome by knowledge, understanding, deliberate countermeasures, and a determined will to resist it (Figure 25).



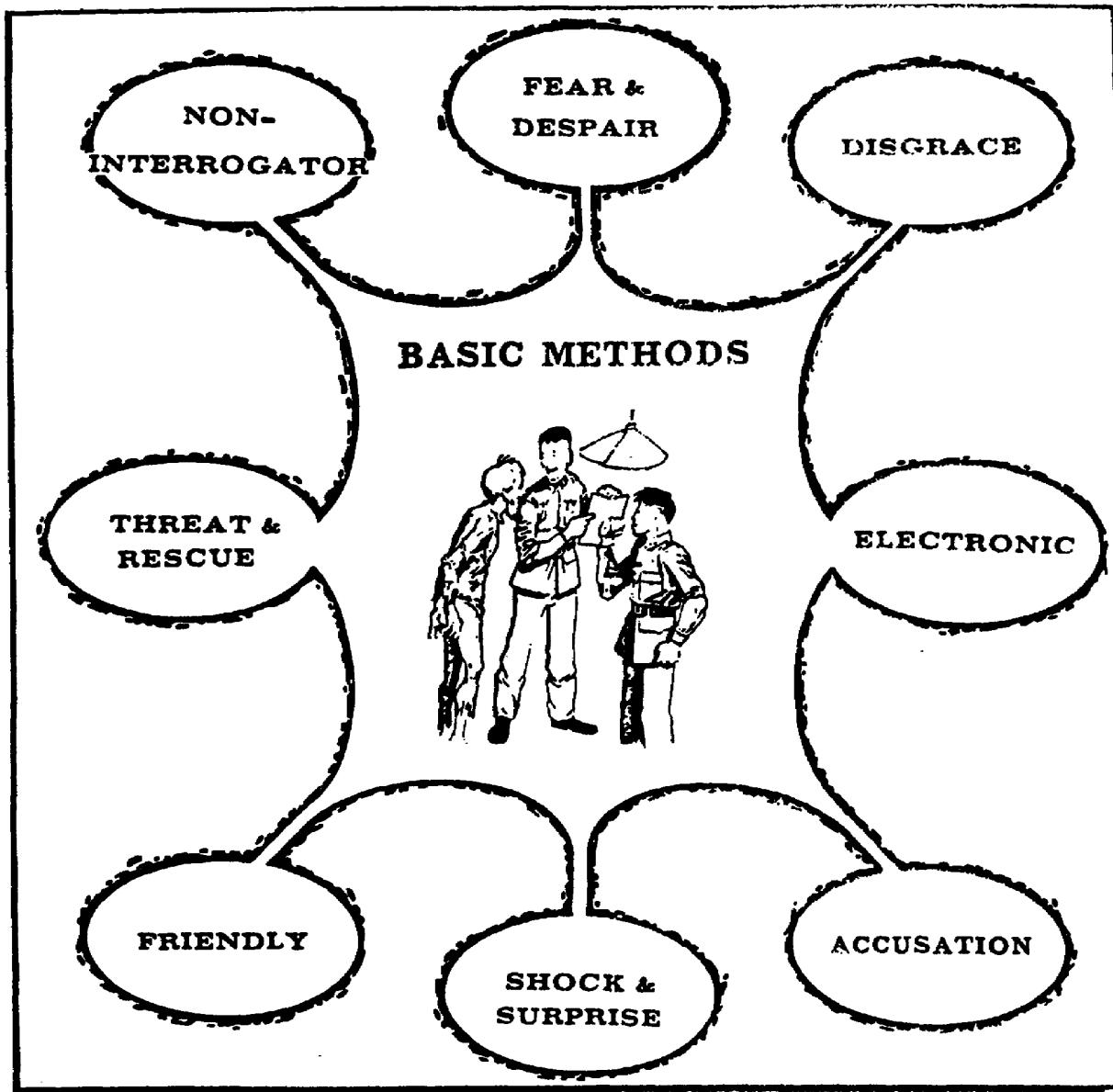
**Figure 25. Isolation.**

#### 11. INSECURITY

Insecurity is the feeling of helplessness or inadequacy resulting from varied stresses and anxieties. These anxieties may be caused by uncertainty regarding individual goals, abilities, and the future. Feelings of insecurity may have widely different effects on your behavior. You should establish goals that are challenging yet attainable. The better you feel about your abilities to achieve goals and adequately meet personal needs, the less you feel insecure.

#### 12. LOSS OF SELF-ESTEEM

Loss of self-esteem may occur in captivity. Self-esteem is the state or quality of having personal self-respect and pride. Lack or loss of self-esteem in survivors may bring on depression and a change in perspective and goals. Humiliation and other factors brought on by the captor may cause the survivors to doubt their worth. Humiliation comes from the feeling of losing pride or self-respect by being disgraced or dishonored and is associated with the loss of self-esteem. Prisoners of war (PWs) must maintain their pride. They must not become ashamed because they are PWs or because of the things that happen to them as a result of being a PW. Survivors who lose face (personally and with the enemy) become more vulnerable to captor exploitation attempts. To solve this problem, survivors should try to maintain a proper perspective about the situation and themselves. Their feelings of self-worth may be bolstered if they recall the implied commitment in the Code of Conduct--PWs will not be forgotten (Figure 26).



**Figure 26. Loss of self-esteem.**

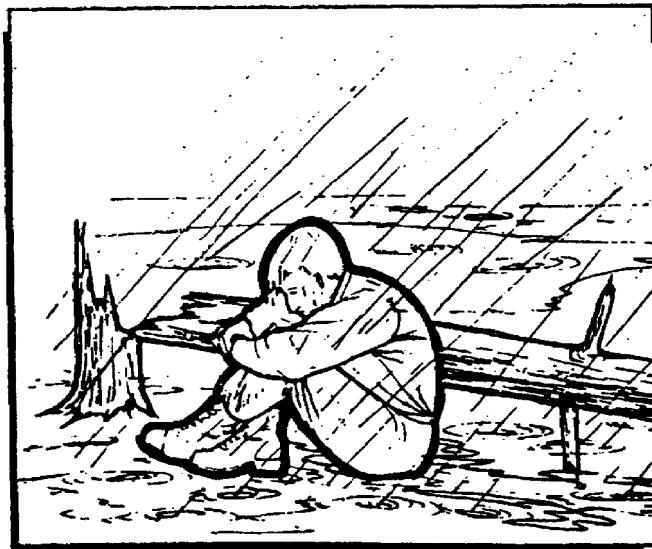
### 13. LOSS OF SELF-DETERMINATION

A self-determined person is relatively free from external controls or influences over his actions. In everyday society, these controls and influences are the laws and customs of society and of the self-imposed elements of our personalities. In a survival situation, the controls and influences can be very different. Survivors may feel as if events, circumstances, and in some cases other people are in control of the situation. Some factors that may cause individuals to feel they have lost the power of self-determination are a harsh captor, captivity, bad weather, or rescue forces that make time or movement demands. This lack of self-determination is more perceived than actual. Survivors must decide how unpleasant factors will be allowed to affect their mental state. They

must have the self-confidence, fostered by experience and training, to live with their feelings and decisions. They also must have the self-confidence to accept responsibility for the way they feel and how they let those feelings affect them.

#### 14. DEPRESSION

As a survivor, depression is the biggest psychological problem that has to be conquered. It should be acknowledged that everyone has mental highs and lows. People experiencing long periods of sadness or other negative feelings are suffering from depression. A normal mood associated with the grief, sadness, disappointment, or loneliness that everyone experiences at times is also depression. Most of the emotional changes in mood are temporary and do not become chronic. Depressed survivors may feel fearful, guilty, or helpless. They may lose interest in basic life needs. Many cases involve pain, fatigue, appetite loss, or other physical ailments. Some depressed survivors try to injure or kill themselves (Figure 27).



**Figure 27. Depression.**

a. Psychiatrists have several theories as to the cause of depression. Some feel a person who, in everyday life and under normal conditions, experiences many periods of depression would probably have a difficult time in a survival situation. Depression is a most difficult problem because it can affect a wide range of psychological responses. The factors can become mutually reinforcing.

EXAMPLE: Fatigue may lead to depression, depression may increase the feeling of fatigue, fatigue leads to deeper depression, and so on.

b. Depression usually begins after a survivor has met the basic needs for sustaining life (water, shelter, and food). Once these basic needs are met, there is often too much time for that person to dwell on the past, the present predicament, and future problems. The survivor must be aware of the necessity to keep the mind and body active to eliminate the feeling of depression. One way to keep busy (daily) is by checking and improving shelters, signals, and food.

## Section II. EMOTIONAL REACTIONS

### 15. FEAR

Fear can either save a life or cost a life. Some people are at their best when scared. Many downed fliers, faced with survival emergencies, have been surprised at how well they remembered their training, how quickly they could think and react, and how much strength they had. The experience gave them new confidence. On the other hand, some become paralyzed when faced with the simplest survival situation. Some have been able to snap themselves out of it before it was too late. In other cases, a fellow aircrew member was on hand to assist. However, others have not been so fortunate and are not listed among the survivors!

a. A person's reaction to fear depends more on the individual than the situation. This has been demonstrated in actual survival situations and in laboratory experiments. It isn't always the physically strong or happy-go-lucky people who handle fear most effectively. Timid and anxious people have met emergencies with remarkable coolness and strength.

b. Anyone who faces life-threatening emergencies experiences fear. Fear is conscious when it results from a recognized situation (an immediate prospect of bailout) or when experienced as apprehension of impending disaster. Fear also occurs at a subconscious level and creates feelings of worry, depression, uneasiness, or general discomfort. Fear may vary widely in duration, intensity, and frequency and may affect behavior across the spectrum from mild uneasiness to complete disorganization and panic. People have many fears. Some are learned through personal experiences, and others are deliberately taught to them. Fear in children is directed through negative learning, such as being afraid of the dark, noise, animals, or teachers. These fears may control behavior; a survivor may react to feelings and imagination rather than to the problem.

c. When fantasy distorts a moderate danger into a major catastrophe, or vice versa, behavior can become abnormal. There is a general tendency to underestimate. This leads to reckless, foolhardy behavior. An effective method of controlling fear is to deny that it exists. No sharp lines are between recklessness and bravery. Behavior must be checked constantly to maintain proper control.

d. One or more of the physical signs or symptoms in Figure 28 may occur in those who are afraid. However, they may also appear in circumstances other than fear. Physical and psychological symptoms are listed in Figure 28.

<u>PHYSICAL</u>
<b>Nausea</b>
<b>Trembling</b>
<b>Faintness</b>
<b>Stammering</b>
<b>Pupil dilation</b>
<b>Pulse quickening</b>
<b>Stomach emptiness</b>
<b>Higher voice pitch</b>
<b>Mouth and throat dryness</b>
<b>Butterflies in the stomach</b>
<b>Increased muscular tension and fatigue</b>
<b>Perspiration of palms, soles, and armpits</b>
<u>PSYCHOLOGICAL</u>
<b>Irritability</b>
<b>Increased hostility</b>
<b>Feelings of unreality, flight, panic, or stupor</b>
<b>Confusion, forgetfulness, and inability to concentrate</b>
<b>Talkativeness, in early stages, leading to speechlessness</b>

Figure 28. Signs and symptoms of fear.

e. Throughout military history, many people have coped successfully with the most strenuous odds. In adapting to fear, they found support in previous training and experience. There is no limit to human control of fear. Survivors must control fear and not run away from it. Appropriate actions should be to understand fear, admit it exists, and accept fear as reality.

f. Training can help survivors recognize what individual reactions may be. Prior training should assist survivors in learning to think, plan, and act logically, even when afraid. To effectively cope with fear, a survivor must try to keep in mind those abilities shown in Figure 29.

g. Every person has goals and desires. The greatest values exercise the greatest influence. Because of strong moral, religious, or patriotic values, people have been known to face torture and death calmly rather than reveal information or compromise a principle. Fear, a normal reaction to danger, can kill or save lives. By understanding and controlling

fear through training, knowledge, and effective group action, fear can be overcome.

#### DEVELOP CONFIDENCE

Use training opportunities.  
Increase capabilities by keeping physically and mentally fit.  
Know what equipment is available and how to use it.  
Learn as much as possible about all aspects of survival.

#### BE PREPARED

Accept the possibility that "it can happen to me."  
Be properly equipped and clothed at all times.  
Have a plan ready.  
Hope for the best, but be prepared to cope with the worst.

#### KEEP INFORMED

Listen carefully and pay attention to all briefings.  
Know when danger threatens and be prepared.  
Increase knowledge of survival environments to reduce the unknown.

#### KEEP BUSY (at all times)

Prevent hunger, thirst, fatigue, idleness, and ignorance about the situation--they increase fear.

#### KNOW HOW FELLOW CREW MEMBERS REACT

Learn to work together in emergencies--to live, work, plan, and help each other as a team.

#### PRACTICE RELIGION

Don't be ashamed of having spiritual faith.

#### CULTIVATE GOOD SURVIVAL ATTITUDES

Keep the mind on a main goal and everything else in perspective.  
Learn to tolerate discomfort.  
Don't exert energy to satisfy minor desires that may conflict with the overall goal--to survive.

#### CULTIVATE MUTUAL SUPPORT

The greatest support under severe stress may come from a tightly knit group.  
Teamwork reduces fear while making the efforts of every person more effective.

#### EXERCISE LEADERSHIP

The most important test of leadership and perhaps its greatest value lies in the stress situation.

#### PRACTICE DISCIPLINE

Attitudes and habits of discipline developed in training carry over into other situations.  
A disciplined group has a better chance of survival than an undisciplined group.

#### LEAD BY EXAMPLE

Calm behavior and demonstration of control are contagious. They reduce fear and inspire courage.

Figure 29. Coping qualities.

## 16. ANXIETY

a. Anxiety is a universal human reaction. Its presence can be felt when changes occur that affect an individual's plans, safety, or methods of living. Anxiety and fear differ mainly in intensity. Anxiety is a milder reaction and specific causes may not be readily apparent; whereas, fear is a strong reaction to a specific, known cause. Anxieties are generally felt when individuals perceive something bad is about to happen. A common description of anxiety is butterflies in the stomach. Anxiety creates feelings of uneasiness, general discomfort, worry, or depression. Common characteristics of anxiety are resentment, indecision, fear of the future, and a feeling of helplessness (Figure 30).

b. To overcome anxiety, the individual must adopt a simple plan. It is essential that you keep your mind off of your injuries and do something constructive. For instance, one PW tried to teach English to the Chinese and to learn Chinese from them.



**Figure 30. Anxiety.**

## 17. PANIC

In the face of danger, a person may panic or freeze and cease to function in an-organized manner. He may have no conscious control over individual actions. Uncontrollable, irrational behavior is common in emergency situations. Anybody can panic, but one may go to pieces more easily than another. Panic is brought on by a sudden overwhelming fear and often can spread quickly. Every effort must be made to bolster morale and calm the panic with leadership and discipline. Panic and fear have

the same signs and should be controlled in the same manner. The survivor below allowed pain to panic him.

"His parachute caught in the tree, and he found himself suspended about 5 feet above the ground . . . one leg strap was released while he balanced in this aerial position, and he immediately slipped toward the ground. In doing so, his left leg caught in the webbing and he was suspended by one leg with his head down. Unfortunately, the pilot's head touched an ant hill and ants immediately swarmed over him. Apparently, in desperation, the flier pulled his gun and fired five rounds into the webbing holding his foot. When he did not succeed in breaking the harness, he took his own life. It was obvious from the discoverer's report that if the pilot had even tried to turn around or to swing himself from his inverted position, he could have reached either the aerial roots or the latticed trunk of the tree. With these branches, he should have been able to pull himself from the harness . . . . The fact that his head was in a nest of stinging ants only added to his panic, which led to the action that took his life."

#### 18. HATE

Hate is a powerful emotion that can have positive and negative effects on a survivor. Understanding hate and its causes are the keys to learning how to control it. It is an acquired emotion rooted in a person's knowledge or perceptions. The accuracy or inaccuracy of the information is irrelevant to learning to hate.

a. A person, object, or anything that may be understood intellectually (political concepts or religious dogma) can promote feelings of hate. These feelings (usually accompanied with a desire for vengeance, revenge, or retribution) have sustained former PWs through harsh ordeals. If an individual loses perspective while under the influence of hate and reacts emotionally, rational solutions to problems may be overlooked and the survivor may be endangered.

b. To effectively deal with this emotional reaction, the survivor must examine the reasons why the feeling is present. Once reasons have been determined, the survivor should decide what to do. Whatever approach is selected, it should be as constructive as possible. A survivor must not allow hate to control him.

#### 19. RESENTMENT

Resentment is experiencing an emotional state of displeasure or indignation toward some act, remark, or person that has been regarded as causing personal insult or injury. Luck and fate may play a role in any survival situation. A hapless survivor may resent a fellow PW, travel partner, and so forth if that other person is perceived to be enjoying a success or advantage not presently experienced by the observer. The

survivor must understand that events cannot always go as expected. It is detrimental to morale and could affect chances of survival if resentment over another's attainments become too strong. Imagined slights or insults are common. The survivor should try to maintain a sense of humor and perspective about ongoing events and realize that stress and lack of self-confidence play roles in bringing on feelings of resentment.

## 20. ANGER

Anger is a strong feeling of displeasure and belligerence aroused by a real or supposed wrong. People become angry when they cannot fulfill a basic need or desire which seems important. When anger is not relieved, it may turn into a more enduring attitude of hostility, characterized by a desire to hurt or destroy the person or thing causing the frustration. When anger is intense, the survivor loses control. This may result in impulsive behavior which may be destructive. Anger is a normal response that can serve a useful purpose when controlled carefully. If the situation warrants and there is no threat to survival, one could yell, scream, take a walk, exercise vigorously, or get away from the source (if only for a few minutes). The following person could not control his anger (Figure 31):

**"I tried patiently to operate it (radio) in every way I had been shown. Growing more angry and disappointed at its failure, I tore the aerial off, threw the cord away, beat the battery on the rocks, then threw the pieces all over the hillside. I was sure disappointed."**

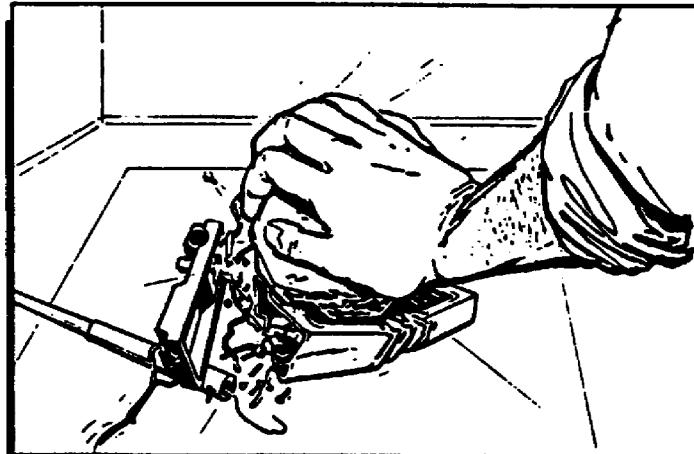


Figure 31. Anger.

## 21. IMPATIENCE

a. Psychological stresses brought about by impatience can manifest themselves quickly in physical ways. Internally, the effects of impatience can cause changes in physical and mental well-being. Survivors who allow impatience to control their behavior may find that their efforts prove to be counterproductive and possibly dangerous. For instance, evaders who don't have the ability or willingness to suppress annoyance when confronted with delay may expose themselves to capture or injury.

b. Potential survivors must understand they have to bear pain, misfortune, and annoyance without complaint. In the past, many survivors have displayed tremendous endurance (mental and physical) in times of distress or misfortune. While not every survivor is able to display such strength of character in all situations; each person should learn to recognize things which may make him impatient in order to avoid acting unwisely. The survivor below couldn't wait.

"I became very impatient. I had planned to wait until night to travel but I just couldn't wait. I left the ditch about noon and walked for about two hours until I was caught."

## 22. DEPENDENCE

The captivity environment is the prime area where a survivor may experienced feelings of dependency. The captor will try to develop feelings of need, trust, and support in prisoners. By regulating the availability of basic needs (food, water, clothing, social contact, and medical care), captors show their power and control over the prisoners' fate. Through emphasizing the prisoner's inability to meet his own basic needs, captors seek to establish strong feelings of prisoner dependency. This dependency can make prisoners extremely vulnerable to captor exploitation. By recognizing this captor tactic the PW has the key to countering it. Survivors must understand that, despite captor controls, they control their own lives. Meeting even one physical or mental need can provide a PW with a victory and the foundation for continued resistance against exploitation (Figure 32).

## 23. LONELINESS

Loneliness can be very debilitating during a survival situation. Some people learn to control and manipulate their environment and become more self-sufficient while adapting to changes. Others rely on protective persons, routines, and familiarity with surroundings to function and obtain satisfaction (Figure 33).

a. The ability to combat loneliness during a survival situation must be developed long before the situation occurs. Self-confidence and self-sufficiency are key factors in coping with loneliness. People develop these attributes by developing and demonstrating competence in performing tasks. As the degree of competence increases, so does self-confidence and

self-sufficiency. Military training, specifically survival training, is designed to provide individuals with the competence and self-sufficiency to cope with and adapt to survival living.

b. In a survival situation, the countermeasure to conquer loneliness is to plan, to be active, and to think purposely. Developing self-sufficiency is the primary protection since all countermeasures in survival require the survivor to have the ability to practice self-control.

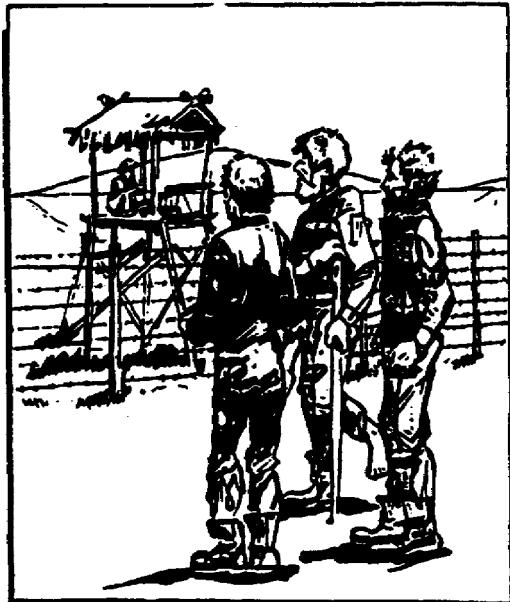


Figure 32. Dependence.

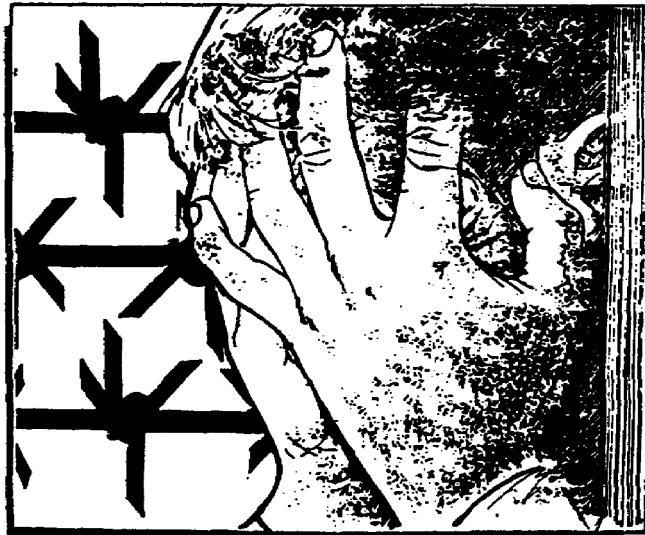


Figure 33. Loneliness.

#### 24. BOREDOM

Boredom and fatigue are related and frequently confused. Boredom is accompanied by a lack of interest and may include strain, anxiety, or depression. This is particularly true when no relief is in sight and the person is frustrated. Relief from boredom must be based on correcting the basic sources-repetition and uniformity. Boredom can be relieved by varying methods-rotating duties, taking rest breaks, broadening the scope of a particular task or job, or other techniques of diversification. The ungratifying nature of a task can be counteracted by clearing up its meaning, objectives, and in some cases, its relation to the total plan. One survivor couldn't think of anything to do, while another survivor invented something to do (Figure 34).

"The underground representative took me to a house to wait for another member of the underground to pick me up. This was the worst part of the whole experience--this waiting. I just sat in the house and waited for two weeks. I thought I would go mad."

"Not knowing what to do, I decided to kill the bugs. There were a lot of spiders, the big ones that do not hurt humans, so I killed the flies and gave them to the spiders to eat."



Figure 34. Boredom.

#### 25. HOPELESSNESS

Hopelessness stems from the negative feeling that, regardless of actions taken, success is Impossible or the certainty that future events will turn out for the worst no matter what a person tries to do. Feelings of hopelessness can occur at virtually any time during a survival situation. Survivors have experienced loss of hope in--

- a. Trying to maintain health due to an inability to care for sickness, broken bones, or injuries.
- b. Returning home alive.
- c. Seeing their loved ones again.

d. Believing in their physical or mental ability to deal with the situation.

e. A person may begin to lose hope during situations where physical exhaustion or exposure to the elements affects the mind. The term "give up itis" was coined in Korea to describe the feeling of hopelessness.

During captivity, deaths occurred from no apparent cause. Individuals actually willed themselves to die. The original premise (in the minds of such people) is that they are going to die. To them, the situation seemed totally futile, and they had passively abandoned themselves to fate. It was possible to follow the step-by-step process. The people who died withdrew themselves from the group, became despondent, then lay down and gave up. In some cases death followed rapidly.

f. One way to treat hopelessness is to eliminate the cause of the stress. Rest, comfort, and morale building activities can help eliminate this psychological problem. Another method is to make the person so angry he wants to get up and attack the tormentors. A positive attitude has a powerful influence on morale and combating the feeling of hopelessness.

g. Since many stress situations cannot be dealt with successfully, it may be necessary to work out a compromise solution. The action may entail changing a survivor's method of operation or accepting substitute goals.

h. Evaders faced with starvation may compromise with their conscience and steal just this one time. They may ignore their food aversion and eat worms, bugs, or even human flesh. A related form of compromise is acceptance of substitute means to achieve the same goals.

### Section III. THE WILL TO SURVIVE

#### 26. DEFINITION

The will to survive is defined as the desire to live despite seemingly insurmountable obstacles (mental and physical). The tools for survival are furnished by the military, the individual, and the environment. Survival training comes from training publications, instruction, and the individual's own efforts. These are not enough without a will to survive. In fact, records prove that "will" alone has been the deciding factor in many survival cases. These accounts are not classic examples of how to survive, but they illustrate that a single-minded survivor with a powerful will to survive can overcome most hardships. There are cases where people have eaten their belts for nourishment, boiled water in their boots to drink as broth; or have eaten human flesh-though this certainly wasn't their cultural instinct.

a. One incident where the will to survive was the deciding factor between life and death involved a person stranded in the desert for eight

days without food and water. He traveled more than 150 miles during searing daytime temperatures and lost 25 percent of his body weight because of the lack of water (usually 10 percent loss causes death). His blood became so thick that the lacerations he received could not bleed until he had been rescued and received large quantities of water. When he started on that journey, something must have clicked in his mind telling him to live, regardless of any obstacles he might confront. Live he did--on guts and will alone (Figure 35)!



Figure 35. Will to survive.

b. Let's flip a coin and check the other side of will. Our location is the wilderness. A pilot ran into engine trouble and chose to deadstick the plane onto a frozen lake rather than punch out. He did a beautiful job and slid to a stop in the middle of the lake. He examined the aircraft for damage. After surveying the area, he noticed a wooded shoreline only 200 yards away where food and shelter could be provided--he began walking in that direction. Approximately halfway, he changed his mind and returned to the cockpit of the aircraft where he smoked a cigar, took out his pistol, and blew his brains out. Less than 24 hours later, a rescue team found him. Why did he give up? Why was he unable to survive? Why did he take his own life? On the other hand, why do people eat their belts or drink broth from their boots? No one really knows, but it's all related to the will to survive.

## 27. OVERCOMING STRESS

The ability of the mind to overcome stress and hardship becomes most apparent when there appears to be little chance of a person surviving. When there appears to be no escape from the situation, the "will" enables a person to begin to win "the battle of the mind." This mental attitude can bridge the gap between the crisis and coping periods.

a. Crisis Period.

(1) This is the point at which the person realizes the gravity of the situation and understands the problem will not go away. At this stage, action is needed! Most people experience shock in this stage as a result of not being ready to face this new challenge. Most recover control of their faculties, especially if they have been prepared through knowledge training.

(2) Shock during a crisis is normally a response to being overcome with anxiety. Thinking is disorganized. At this stage, direction is required because the individual is being controlled by the environment. The person's center of control is external. In a group survival situation, a natural leader may direct and reassure the others. If the situation continues to control the individual or group, the response may be panic, behavior may be irrational, and judgment is impaired. In a lone-survivor situation, the individual must gain control of the situation and respond constructively. In either case, a survivor must evaluate the situation and develop a plan of action. During the evaluation, the survivor must determine the most critical needs to improve the chance of living and being rescued.

b. The Coping Period. The coping period begins after the survivor recognizes the gravity of the situation and resolves to endure it rather than succumb. The survivor must tolerate the physical and emotional effects of stress. These effects can cause anxiety which becomes the greatest obstacle to self-control and solving problems. Coping with the situation requires considerable internal control. Those who fail to think constructively may panic. This could begin a series of mistakes which result in further exhaustion, injury, and sometimes death. Death comes not from hunger pains but from the inability to manage or control emotions and thought processes. The survivor must often subdue urgent desires to travel when that would be counterproductive and dangerous. A person must have patience to sit in an emergency shelter while confronted with an empty stomach, aching muscles, numb toes, and suppressed feelings of depression and hopelessness.

28. ATTITUDE

The survivor's attitude is the most important element of the will to survive. With the proper attitude, almost anything is possible. The desire to live is sometimes based on the feelings toward another person or thing. Love and hatred, two emotional extremes, have moved people to do exceptional things (physically and mentally). The lack of a will to survive can sometimes be identified by the individual's lack of self-esteem; lack of motivation to meet essential survival needs; and lack of emotional control resulting in reckless, paniclike behavior.

a. The will to survive must strengthen during an emergency. The first step is to avoid a tendency to panic or fly off the handle. Sit down, relax, and analyze the situation rationally. Once thoughts are

collected and thinking is clear, the next step is to make decisions. In normal living, people can avoid decisions and let others do their planning. This seldom works in a survival situation. Failure to decide on a course of action is actually a decision for inaction. This lack of decision making may result in death. However, decisiveness must be tempered with flexibility and planning for unforeseen circumstances.

EXAMPLE: An aircrew member down in an arctic nontactical situation decides to construct a shelter for protection from the elements. The planning and actions must allow sufficient flexibility for the aircrew to monitor the area for an indication of rescuers and for them to be prepared to make contact (visually or electronically) with the potential rescuers.

b. Tolerance is the next topic of concern. A survivor or evader has to deal with many physical and psychological discomforts; that is, unfamiliar insects, animals, loneliness, and depression. Aircrew members are trained to tolerate uncomfortable situations. That training must be applied when dealing with environmental stresses.

c. Survivors in tactical and nontactical situations must face and overcome fears to strengthen the will to survive. Fears may be founded or unfounded, generated by the survivor's uncertainty or lack of confidence, or based on the proximity of enemy forces. Indeed, fear may be caused by a wide variety of real and imagined dangers. Despite the source of the fear, survivors must recognize it and make a conscious effort to overcome it.

## 29. OPTIMISM

One of a survivor's key assets is optimism-hope and faith. Survivors must maintain a positive, optimistic outlook on their circumstance. Prayer or meditation can be helpful. How a survivor maintains optimism is not so important as its use.

REVIEW EXERCISE

REQUIREMENT: Solve the following by selecting the correct answers:

1. Two of the gravest threats to a successful survival are concessions to comfort and
  - A. apathy.
  - B. mental numbness.
  - C. human companionship.
  - D. a feeling of helplessness.
2. The effects of extreme temperature changes from very hot days to very cold nights can be reduced by
  - A. properly using clothing and shelters.
  - B. building a shelter that suits the environment.
  - C. sheltering yourself from the effects of extreme heat and cold.
  - D. increasing activity during the day and seeking shelter at night.
3. You can control the effects of fatigue by
  - A. enhancing diet with survival food items.
  - B. establishing a program of periodic rest.
  - C. moving only when necessary to avoid capture.
  - D. consuming as much food and water as possible.
4. In adapting to fear, an inappropriate survivor response is to
  - A. admit fear exists.
  - B. try to understand fear.
  - C. accept fear as reality.
  - D. think about what might happen to you and trust your emotions.
5. In what environment will you feel the greatest feelings of dependency?
  - A. escape
  - B. evasion
  - C. captivity
  - D. initial isolation
6. Any amount of training and equipment does NOT ensure that you will overcome your survival situation if you do NOT possess
  - A. a will to survive.
  - B. a positive attitude.
  - C. strong moral convictions.
  - D. excellent physical health.

7. What is the most important element of the will to survive?

- A. courage
- B. attitude
- C. judgment
- D. self-control

REVIEW EXERCISE SOLUTIONS

1. A. (paragraph 2c)
2. A. (paragraph 5b)
3. B. (paragraph 8b)
4. D. (paragraph 15e)
5. C. (paragraph 22)
6. A. (paragraph 26)
7. B. (paragraph 28)

### LESSON 3. BASIC SURVIVAL MEDICINE

TASK: 9103.01-0002, Maintain Physical Capability to Survive.

OBJECTIVE: You will be able to describe the basic survival medicines.

CONDITIONS: You may use the lesson text and references to complete the review exercise.

STANDARD: You should answer correctly at least five of seven review exercise questions.

REFERENCES: ARs 95-17 (May 84), 350-30 (Dec 85), 525-90 (Nov 71, with changes 1 and 2); AFM 64-5 (Sep 85); FMs 1-302 (Sep 83, with change 1), 20-150 (Jul 73, with changes 1 through 5), 21-76 (Mar 86); and DOD Directive 1300.7 (Dec 84).

### LESSON TEXT

#### 1. GENERAL

a. Foremost, among the many things that can compromise a survivor's ability to return are medical problems. Injuries commonly associated with a crash or forced landing are sprains, burns, fractures, dislocations, and other types of wounds.

b. Injuries and illnesses peculiar to certain environments can reduce survival expectancy. In cold climates, and often in an open sea survival situation, exposure to extreme cold can produce serious tissue trauma, such as frostbite or death from hypothermia. Exposure to heat in warm climates, and in certain areas on the open seas, can produce heat cramps, heat exhaustion, or life-threatening heatstroke.

c. Illnesses contracted during evasion or in a captivity environment can interfere with successful survival. Among these are typhus, malaria, cholera, respiratory diseases, gastrointestinal disorders, and skin infections and infestations.

d. A review of the survival experiences from World War II, Korea, and Southeast Asia indicates that, while US military personnel generally knew how to administer first aid to others, there was a marked inability to administer self-aid. Only basic medical care had been taught to most military members. Repeated emphasis was that even minor injuries or ailments, when ignored, became major problems in a survival situation. Thus, prompt attention to the most minor medical problem is essential in a survival episode. Applying principles of survival medicine should enable

military members to maintain health and wellbeing in a hostile or non-hostile environment until rescued and returned to friendly control.

e. Information in this lesson is a basic reference to self-aid techniques and techniques found in folk medicine. The information describes procedures that can maintain health in medically austere situations. It includes items used to prevent and treat injuries and illnesses. Because there is no typical survival situation, the approach to self-aid must be flexible, placing emphasis on using what is available to treat the injury or illness. Medical treatment offered by people of other cultures may be far different from our own. Such treatment may be repugnant to some US military personnel; however, medical aid offered to survivors in non-US cultures may be the best available in the given circumstance.

EXAMPLE: In rural areas of Vietnam, a poultice of python meat is used to treat internal lower back pain.

f. The procedures in this lesson must be viewed in the reality of a true survival situation. The results of treatment may be substandard compared with present medical standards. However, these procedures will not compromise professional medical care that becomes available following rescue. Moreover, in the context of a survival situation, they may represent the best available treatment to extend the individual's survival expectancy.

## 2. PROCEDURES AND EXPEDIENTS

Survival medicine encompasses required and available procedures and expedients to preserve health and to prevent, improve, or treat injuries and illnesses. They are also suitable to be self-applied by nonmedical personnel or applied to comrades in survival situation circumstances.

a. Survival medicine is more than first aid in the conventional sense. It approaches final definitive treatment in that it does not depend on the availability of technical medical assistance within a reasonable period.

b. To avoid duplicating information generally available, the basic principles of first aid are not repeated. Psychological factors affecting survival were covered in lesson 2.

## 3. HYGIENE

In a survival situation, cleanliness is essential to prevent infection. Adequate personal cleanliness not only protects against disease germs present in the individual's surroundings, but it also protects the group by reducing the spread of these germs (Figure 36).

a. Washing (particularly the face, hands, and feet) reduces the chances of infection from small scratches and abrasions. A daily bath or shower with soap and hot water is ideal. If no tub or shower is

available, the body should be cleaned with a cloth and soapy water, paying particular attention to the face, ears, hands, feet, and body creases (armpits, groin, and so forth). After this type of bath, the body should be rinsed thoroughly with clear water to remove all traces of soap which could cause irritation. Soap, although an aid, is not essential to keeping clean. Sand, ashes, loamy soil, and other expedients may be used to clean the body and cooking utensils.



**Figure 36. Hygiene.**

b. When water is in short supply, the survivor should take an air bath. All clothing should be removed and the body simply exposed to the air. Exposure to sunshine is ideal, but even on an overcast day or indoors exposing the naked body to the air for two hours refreshes the body. Care should be taken to avoid sunburn when bathing in this manner. Exposure in the shade, shelter, or sleeping bag helps if the weather conditions do not permit direct exposure.

c. Hair should be kept trimmed, preferably to 2 inches or less, and the face should be clean-shaven. Hair provides a surface for parasite attachment and bacterial growth. Keeping the hair short and the face clean-shaven provides less habitat for these organisms. Wash the hair with soap and water at least weekly. When water is in short supply, comb or brush the hair thoroughly and cover it to keep it clean. Inspect the hair weekly for parasites and remove them if they exist.

d. Unclean hands is the principal means of infecting food and open wounds. They should be washed with soap and water, if available, after handling any material likely to carry germs. This is especially important after each visit to the latrine; when caring for the sick and injured; and

before handling food, food utensils, or drinking water. Keep fingers out of the mouth, and closely trim and clean fingernails. A scratch from a long fingernail could develop into a serious infection.

#### 4. ORAL CARE

a. To prevent tooth decay and gum disease, cleanse the mouth and teeth thoroughly with a toothbrush and dentifrice at least once each day. If a toothbrush is not available, a "chewing stick" can be fashioned from a twig. Wash the twig, then chew on one end until it is frayed and brush-like. Teeth can then be brushed thoroughly with the stick. If necessary, wrap a clean strip of cloth around the finger and rub on the teeth to wipe away food particles. If neither toothpaste nor toothpowder is available, salt, soap, or baking soda can be used. Gargling and rinsing with willow bark tea helps protect the teeth.

b. Food debris that has accumulated between the teeth should be removed by using dental floss or toothpicks. The parachute inner core filaments can be separated and used as dental floss. Small twigs can be used for toothpicks. Stimulate gum tissues daily by rubbing them vigorously with a clean finger.

c. Use as much care in cleaning dentures and other dental appliances (removable or fixed) as cleaning natural teeth. Remove and clean dentures and removable bridges with a denture brush or chew stick at least once each day. Brush or rub regularly the tissue under the dentures for proper stimulation. Remove dental appliances at night or for a two- or three- hour period during the day.

#### 5. FOOT CARE

Of utmost importance in a survival situation is proper care of the feet, especially if the survivor has to travel. Serious foot trouble can be prevented by observing a few simple rules.

a. Feet should be washed, dried thoroughly, and massaged daily. If water is in short supply, air clean the feet along with the rest of the body. Trim toenails straight across to prevent ingrown toenails.

b. Break in boots before wearing them on any mission. They should fit properly, neither so tight that they bind and cause pressure spots nor so loose that they permit the foot to slide forward and backward when walking. Improvise insoles to reduce any friction spots inside the shoes.

c. Socks should be large enough to allow the toes to move freely but not so loose that they wrinkle. Wool socks should be at least one size larger than cotton socks to allow for shrinkage. Socks with holes should be properly darned before they are worn. Wearing socks with holes or those poorly repaired may cause blisters. Clots of wool on the inside and outside should be removed from wool socks because they may cause blisters. Change and wash socks thoroughly with soap and water daily. Wash woolen

socks in cool water to lessen shrinkage. In camp, stretch freshly laundered socks to facilitate drying in the sun or in an air current. While traveling, damp socks can be dried by placing them inside layers of clothing or hanging them on the outside of the pack. If socks are damp, exchange them for dry ones.

d. When traveling, examine the feet regularly for red spots or blisters. Cover tender areas with adhesive tape to prevent blister formation.

#### 6. CLOTHING AND BEDDING

Clothing and bedding become contaminated with any disease germs that may be present on the skin, or in the stool or urine, or in nose and throat secretions. Therefore, keep clothing and bedding as clean as possible to decrease the chances of skin infection and the possibility of parasite infestation. Wash soiled outer clothing with soap and water. Change underclothing and socks daily. If water is in short supply, air clean clothing. For air cleaning, take clothing outdoors and air and sun for two hours. Wear air-cleaned clothing in rotation. Turn sleeping bags inside out, fluff, and air them after each use. Change bed linen at least once a week; air and sun blankets, pillows, and mattresses (Figure 37).

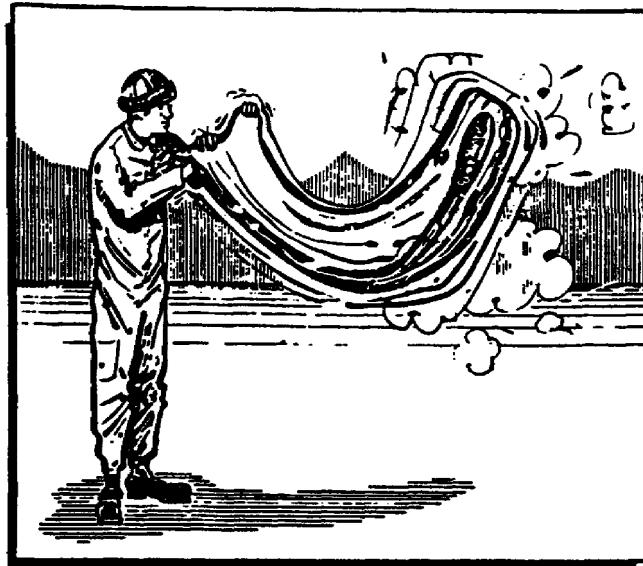


Figure 37. Bedding.

#### 7. REST

a. Rest is necessary for the survivor because it restores physical and mental vigor and promotes healing. In the initial stage of the survival situation, rest is particularly important. After tasks requiring

immediate attention are complete, inventory available resources, decide on a plan of action, and have a meal. This planning session provides a rest period without a feeling of doing nothing.

b. If possible, plan regular rest periods daily. Time allotted for rest depends on a number of factors including the survivor's physical condition and the presence of hostile forces. Usually, 10 minutes each hour is sufficient. During rest periods, change either from physical activity to complete rest or from mental activity to physical activity as the case may be. Survivors must learn to become comfortable and to rest under less than ideal conditions.

## 8. INJURY MANAGEMENT

a. Breathing. Lack of breathing is a life-threatening emergency that requires immediate attention. If the problem is the result of an acute upper airway obstruction and other resuscitation methods have failed, then an immediate cricothyroidotomy (an artificial airway) may be required to save the individual's life. A cricothyroidotomy is an opening in the trachea between the thyroid cartilage and the cricoid cartilage that permits air to pass directly from the outside into the trachea without passing through the upper air passages. A cricothyroidotomy is performed as stated in Figure 38.

CAUTION: This procedure requires specific knowledge and training. Nonmedical personnel should perform it only in a combat survival situation and only as a last resort.

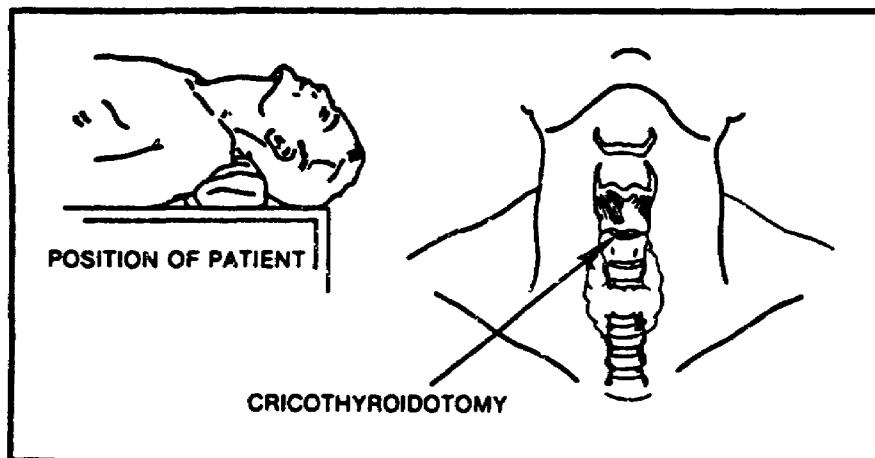
b. Bleeding. It is most important to control bleeding in survival situations where replacement transfusions are not possible. Take immediate steps to stop the flow of blood, regardless of its source. Use the method commensurate with the type and degree of bleeding. The tourniquet, when required and properly used, saves lives; if improperly used, it may cost a life. The basic characteristics of a tourniquet and ways to use it are covered in standard first-aid texts; however, certain points merit emphasis in the survival situation. Use a tourniquet only after every alternative method has been attempted. Gradually loosen the tourniquet after 20 minutes if it is determined that medical assistance will not be available for more than two hours after applying it. If bleeding has stopped, remove the tourniquet; if bleeding continues, reapply and leave it in place. Apply the tourniquet as near the bleeding as possible, between the wound and the heart, to reduce the amount of tissue lost.

### c. Pain.

#### (1) Controlling pain.

(a) Controlling pain is difficult and essential. In addition to its morale-breaking discomfort, pain contributes to shock and makes the survivor more vulnerable to enemy influences. Ideally, pain

should be eliminated. However, this is not always possible, hence measures for pain control are beneficial.



- STEP 1: Place the victim on a flat surface with the neck extended and the head tilted backwards so that neck structures are stretched. Only if time permits, clean the skin with soap and water. Apply an antiseptic to the skin, if available.
- STEP 2: With your fingers on the victim's neck, precisely identify the cricothyroid membrane. The thyroid cartilage is the rather large structure that forms the Adam's apple. The cricoid cartilage is the ringlike cartilaginous structure just below the thyroid cartilage. It is not as large as the thyroid cartilage but is approximately twice as thick as the cartilaginous rings that make up the remainder of the trachea below it. The cricothyroid membrane is located between the thyroid cartilage and the cricoid cartilage. At this point, only the membrane and skin separate the airway from the outside.
- STEP 3: Lift the skin over the cricothyroid membrane, and make a 1/2-inch vertical incision through the skin in the midline with a knife, scalpel, razor blade, or other sharp instrument.
- STEP 4: With your fingers, separate the skin, exposing the cricothyroid membrane.
- STEP 5: Make a transverse incision in the membrane, exposing the tracheal lumen (opening). Once the incision has been made, the opening must be maintained so that air can move between the trachea and the outside. This can best be done by carefully inserting a piece of clean tubing, which can be obtained from a ballpoint pen, into the opening. In an absolute emergency, anything that will maintain this opening may be used. When the tube has been inserted, air can be heard moving in and out of the opening.
- STEP 6: Secure the opening. If a tube has been inserted, attach a strip of cloth or piece of string carefully around the tube and tie it around the neck. The tube must be anchored to keep it from falling out or from being jammed into the back wall of the trachea. The opening must be maintained until the victim is in the care of a physician or until the unconscious victim recovers enough that the cricothyroidotomy is no longer necessary (swelling goes down and the victim can breathe normally). When the tube is removed, the wound will close and heal with no further attention (other than an antiseptic and an airtight bandage).

Figure 38. Cricothyroid membrane location.

(b) The part of the body that is hurting should be put at rest, or at least its activity restricted. The position selected should be the one giving the most comfort and the easiest to maintain. Splints and bandages may be necessary to maintain immobilization. Elevation of the injured part, with immobilization, is particularly beneficial in throbbing pain. Cleanse open wounds, remove foreign bodies, and apply a clean dressing to protect the wound from the air. Generally, warmth reduces pain (toothache and bursitis); however, in some conditions, applying cold has the same effect (strains and sprains). Warmth or cold is best applied by using water due to its high specific heat. The survivor then can try to determine which is most beneficial.

(2) Reducing pain.

(a) Drugs are very effective in reducing pain; however, they probably will not be available in a survival situation. Aspirin, APCs, and such tablets are primarily intended to combat the discomforts of colds and upper respiratory diseases. These drugs just take the edge off severe pain but should be taken if available. If no aspirin is available, there are some parts of vegetation that can be used.

(b) Most willows have been used for their pain-relieving and fever-lowering properties for hundreds of years. Fresh bark contains salicin which probably decomposes into salicylic acid in the human body. The leaves of wintergreen (checkerberry) made into a tea were used by some Indians for body aches and pains. The boiled bark of the magnolia tree helps relieve internal pains and fever and has been known to stop dysentery.

(c) To be really effective in controlling pain, stronger narcotic drugs are required. During active hostilities, morphine may be available in aircraft and individual first-aid kits.

d. Shock.

(1) Circulatory reaction. Shock in some degree accompanies all body injuries; frequently, it is the most serious consequence. In essence, shock is a circulatory reaction of the body to an injury. Changes to the circulatory system initially favor body resistance to the injury (by ensuring adequate blood supply to vital structures), but these changes may progress to circulatory failure and death. All aircrew members should be familiar with the signs and symptoms of shock so that it may be anticipated, recognized, and dealt with effectively. However, the best survival approach is to treat all moderate and severe injuries for shock. No harm is done, and such treatment speeds recovery.

(2) Fluids. Normally, fluids administered by mouth are generally prohibited in the treatment of shock following severe injury. When given by mouth, such fluids are poorly absorbed and may interfere with administration of anesthesia for surgery. In survival medicine, however, the situation is different in that the treatment being given is the final

treatment. Survivors cannot be deprived of water for long periods because they are injured; in fact, recovery depends on adequate hydration. Small amounts of tea, coffee, or warm water given frequently early in shock are beneficial if the patient is conscious, can swallow, and has no internal injuries. In later shock, fluids by mouth are less effective as they are not absorbed from the intestines. Burns, particularly, require large amounts of water to replace fluid lost from injured areas. Alcohol should never be given to a person in shock or one who may go into shock.

(3) Psychogenic shock. Psychogenic shock is frequently noted immediately following an emergency, as in a bailout. Psychogenic shock, which occurs even without injury, requires attention to limit it in degree and duration. The degree of this postimpact shock varies widely among individuals, but its occurrence is almost universal. In reality the survivor has passed through two major emergencies almost simultaneously: the aircraft incident leading to the survival situation and the situation itself. Should the survivor be injured (and the majority are), a third emergency is added. It is not uncommon, then, that some psychogenic reaction with circulatory implications occurs. Resistance to this type of shock depends on the individual's personality and amount of training previously received. Treatment consists of stopping all activities (when possible), relaxing, evaluating the situation, and formulating a plan of action before the survival situation begins.

## 9. INJURIES

### a. Head Injuries.

(1) Head injuries pose additional problems related to brain damage as well as interfering with breathing and eating. Bleeding is more profuse about the face and head area, but infections have more difficulty taking hold. This makes it somewhat safer to close such wounds earlier to maintain function. A cricothyroidotomy may be necessary if breathing becomes difficult because of an obstruction of the upper airways.

(2) In the event of unconsciousness, watch the patient closely and keep him still. Even in the face of mild or impending shock, keep the head level or slightly elevated if there is reason to expect brain damage. Do NOT give fluids or morphine to unconscious persons.

b. Chest Injuries. Chest injuries are common, painful, and disabling. Severe chest bruises or rib fractures require that the chest be immobilized to prevent painful movements of the chest wall. Apply the bandage while the patient deeply exhales. In the survival situation, it may be necessary for you to wrap your own chest. This is more difficult but can be done by attaching one end of the long bandage (parachute material) to a tree or other fixed object. While holding the other end in the hand, slowly roll your body toward the tree. Be sure to keep enough counterpressure on the bandage to ensure a tight fit.

c. Eye Injuries. Eye injuries are quite serious in a survival situation because of pain and interference with other survival functions. The techniques for removing foreign bodies and for treating snow blindness are covered in standard first aid manuals. More serious eye injuries that disrupt the contents of the orbit may require the lids of the affected eye be taped closed or covered to prevent infection.

d. Thorns and Splinters. To reduce the danger of encountering thorns and splinters in survival situations, wear gloves and proper footgear. Promptly remove these agents to prevent infection. Wounds made by these agents are deeper than their width which increases chances of infection by those organisms (tetanus) which grow best in the absence of oxygen. Remove splinters with a sharp instrument (needle or knife), needle-nose pliers, or tweezers. Take care to get all of the foreign body out; sometimes it is best to open the wound sufficiently to properly cleanse it and allow air to enter the wound. When cleaned, treat it as any other wound.

e. Blisters and Abrasions. Foot care is extremely important in the survival situation. Care for blisters and abrasions promptly. If you note redness or pain, stop (if at all possible) to find and correct the cause. Frequently, a protective dressing, bandage, or adhesive is sufficient to prevent a blister. If a blister does occur, do NOT remove the top layer of skin. Opening a blister provides entry for infection. Clean the area with antiseptic, if available, and apply a clean dressing. Treat all open blisters and abrasions in the same manner.

f. Insect Bites. Bites of insects, leaches, ticks, fleas, and chiggers pose several hazards. Many of these organisms transmit lethal diseases, and the bite itself is likely to become infected if it is repeatedly scratched. You should inspect your body frequently for all types of animal parasites and remove them as soon as they are detected. Pay particular attention to areas such as the folds of the skin. Leaches are best removed by applying heat or some other irritant to encourage them to relax their hold on your skin. Ticks, on the other hand, should not be removed with the aid of a heat source because it increases the likelihood that contaminants will be expelled into the bite area. Remove ticks by grasping as much of their body as possible and pulling with steady pressure until it releases its hold on the skin. You can reduce your exposure to animal parasites by avoiding the shady or wooded areas immediately adjacent to open fields. Treat such wounds as any other wound. Apply a cold wet dressing to reduce itching, scratching, and swelling.

g. Fractures.

(1) Proper immobilization of fractures, dislocations, and sprains is even more important in survival medicine than in conventional first aid. In survival medicine rather than merely making the patient comfortable during transport to eventual treatment; the initial immobilization is part of the ultimate treatment. Although immobilizing body parts to help control pain helps, immobilization in the proper position hastens

fracture healing and improves the ultimate functional result. In the survival situation, immobilization must suffice for a relatively long period of time. Materials for splinting and bandaging are available in most survival situations. Proper techniques are detailed in most first-aid manuals.

(2) Reducing (setting) fractures is normally beyond the scope of first aid; however, in the prolonged survival situation, correcting bone deformities is necessary to hasten healing and obtain the greatest functional result. The best time for manipulation of a fracture is in the period immediately following the injury, before painful muscle spasms ensue. Apply traction until overriding bone fragments are brought into line (check by the other limb) and the extremity is firmly immobilized. Frequently, it is advantageous to continue traction after reduction to ensure proper bone alignment.

(3) Since plaster casts are not available in the survival situation, improvising an immobilization device is necessary. This may be done by using several parallel, pliable willow branches woven together with vines or parachute lines. Use care so that the extremity is not constricted when swelling follows the injury. In an escape and evasion situation, it may be necessary to preserve the mobility of the survivor after reducing the fracture. This is difficult in fractures of the lower extremities, although tree limbs may be improvised as crutches. With companions, using improvised litters may be possible.

(4) Reducing dislocated joints is similar to that of fractures. Apply gentle, but firm, traction and manipulate the extremity until it "snaps" back into place. If the survivor is alone, the problem is complicated but not impossible. Traction can still be applied by using gravity. Tie or wedge the distal (furthest) portion of the extremity to the fork of a tree or similar fixation point. Then allow the weight of the body to exert the necessary traction, manipulating the joint until the dislocation is reduced.

h. Burns.

(1) Burns, frequently encountered in aircraft accidents and subsequent survival situations, pose serious problems. Burns cause severe pain, increase the probability of shock and infection, and offer an avenue for considerable body fluid and salt loss. Initially, relieve the pain and prevent infection by covering the wound with any clean dressing. This reduces pain and the chance for infection. Further, such protection enhances patient mobility and the capability for performing other vital survival functions. In burns about the face and neck, ensure the victim has an open airway. If necessary, perform a cricothyroidotomy before the patient develops extreme difficulties. Burns of the face and hands are particularly serious as they interfere with the capability of survivors to meet their own needs. Soaking certain barks (willow, oak, or maple) in water leeches acid from the bark. Applying this solution soothes and protects burns through its astringent action.

CAUTION: Do not apply greases or fats to burns.

(2) Maintaining body fluids and salts is essential to recover from burns. The only way to administer fluids in a survival situation is by mouth; hence, the casualty should ingest sufficient water early before nausea and vomiting from toxicity intervenes. Consuming cooked animal eyes and blood helps restore electrolyte levels if salt tablets are not available.

NOTE: The survivor may also pack salt in personal survival kits to replace electrolytes (1/4 teaspoon per quart of water).

## 10. WOUNDS

a. Lacerations. Lacerations (cuts) are best left open because of the probability of infection. Clean thoroughly, remove foreign material, and apply a protective dressing. Frequently, immobilization hastens the healing of major lacerations. On occasion (tactical), it may be necessary to close (cover) the wound, despite the danger of infection, in order to control bleeding or increase the mobility of the patient. If a needle is available, the wound may be closed by suturing. Thread may be procured from fabric, clothing, or parachute lines. If suturing is required, place individual stitches far enough apart to permit drainage of the underlying parts. Do not worry about the cosmetic effect; just approximate the tissue. For scalp wounds, you may use hair to close the wound after the wound is cleansed. Infection is less a danger in the scalp area because of the rich blood supply.

b. Abdominal Wounds. In the survival situation, abdominal wounds are particularly serious. Without immediate and adequate surgery, patients with these wounds have an extremely high mortality rate and their seriousness renders patients totally unable to care for themselves. Apply a secure bandage to keep intestines from extruding through the wound. If the intestine is extruded, do NOT replace it because it is almost certain that the results will be fatal. Cover the extruded bowel with a large dressing, and keep the dressing wet with urine or any fluid that is fit to drink. The patient should lie on his back and avoid any motion that increases intra-abdominal pressure which might extrude more bowel. Keep the survivor immobile or move him on a litter. Nature eventually takes care of the problem either through death or by walling-off the damaged area.

c. Sucking Chest Wounds. These wounds are easily recognized by the sucking noise and the appearance of foam or bubbles in the wound. These wounds must be closed immediately before serious respiratory and circulatory complications occur. Ideally, the patient should attempt to exhale while holding the mouth and nose closed (Valsalva maneuver) as the wound is closed. This deflates the lungs and reduces the air trapped in the pleural cavity. Frequently, a taped, airtight dressing is all that is needed, but sometimes it is necessary to put in a stitch or two to make sure the wound is closed.

## 11. GENERAL TREATMENT

a. Infection. Infection is a serious threat to the survivor. The inevitable delay in definite medical treatment and the reality of the survival situation increase the chances of wound infection. Antibiotics may not be available in sufficient amounts. In survival medicine, you must place more emphasis on prevention and control of infection by applying the techniques used before the advent of antibiotics.

(1) Unfortunately, survivors have little control over the amount and type of infection introduced at the time of injury. However, they can help control infection by wearing clean clothes. Use care to prevent additional infection into wounds. Remove clothing from wounds to avoid contaminating surrounding skin areas. Do NOT touch wounds, regardless of type or severity, with dirty hands or objects. One exception to this rule is the essential control of arterial bleeding.

(2) Promptly cleanse all wounds. Water is the most universally available cleaning agent and should be (preferably) sterile. At sea level, sterilize water by placing it in a covered container and boiling it for ten minutes. Above 3,000 feet, boil water one hour (in a covered container) to ensure adequate sterilization. Water remains sterile and can be stored indefinitely as long as it is covered.

(a) Irrigate wounds rather than scrubbing them to minimize additional tissue damage. Wash foreign material from the wound to remove sources of continued infection. Wash the skin adjacent to wounds thoroughly before bandaging. When water is not available for cleaning wounds, consider using urine. Urine may well be the most nearly sterile of all fluids available and, in some cultures, is preferred for cleaning wounds. Use urine from the midstream flow.

(b) While soap is not essential to clean wounds, a bar of medicated soap placed in a personal survival kit and used routinely does much to prevent the infection of seemingly inconsequential injuries. External antiseptics are best used for cleaning scratches, abrasions, and the skin areas adjacent to lacerations. Used in deep, larger wounds, antiseptics produce further tissue damage.

(c) Nature also provides antiseptics that can be used for wound care. The American mountain ash, found from Newfoundland south to North Carolina, and its inner bark have antiseptic properties; the red berries, containing ascorbic acid, have been eaten to cure scurvy. Sweet Gum bark is still officially recognized as being an antiseptic agent. Water from boiled Sweet Gum leaves is also used as an antiseptic for wounds.

b. Body Defenses. The human body has a tremendous capacity for combating infections if it is permitted to do so. Applying heat to an infected wound further aids in mobilizing local body defense measures. Lukewarm salt water soaks help draw out infection and promote oozing of

fluids from the wound, thereby removing toxic products. Poultices of clean clay, shredded bark of most trees, and ground grass seed do the same thing. In addition to the importance of proper rest and nutrition in wound healing and infection control, you should improve the logistics of the injured part. Immobilize the injury in a position to favor adequate circulation to and from the wound. Avoid constrictive clothing or bandages. Despite all precautions, some degree of infection is almost universal in survival wounds. This is the primary reason for the open treatment advocated below.

c. The Open-Treatment Method. This method is the only safe way to manage survival wounds. No effort should be made to close open wounds by suturing or by other procedures. In fact, it may be necessary to open the wound even more to avoid entrapment or infection and to promote drainage. The term "open" does not mean that dressings should not be used. Good surgery requires that although wounds are not "closed," nerves, bone, and blood vessels should be covered with tissue. Such judgment may be beyond the capability of the aircrew member, but protecting vital structures aids in recovery and ultimate function. A notable exception to open treatment is the early closure of facial wounds which interfere with breathing, eating, or drinking. Wounds, left open, heal by forming infection resistant granulation tissue (proud flesh). This tissue is easily recognized by its moist red granular appearance-a good sign in any wound.

d. Antibiotics. Take antibiotics, when available, to control infection. Consensus is that the drug should be a "broad spectrum" drug; that is, it should be effective against any microorganism rather than specific for just one or two types. The exact amount included in survival kits varies with the drug and the basic number and types of infections to be expected. Remember that antibiotics are potency-dated items (shelf-life about four years). Including them in survival kits requires inspecting the kit and replacing the drugs with active medical stocks.

e. Debridement. Debridement is the surgical removal of lacerated, devitalized, or contaminated tissue. Severe wounds may need debriding to minimize infection (particularly of the gas-gangrene type) and to reduce (lower) septic (toxic) shock. In essence, debridement is the removal of foreign material and dead or dying tissue. The procedure requires skill and should only be done by nonmedical personnel in cases of dire emergency. If required, cut dead skin away. Trim the muscle back to a point where bleeding starts and gross discoloration ceases. Damaged fat tends to die and should be cut away. Conserve bone and nerves where possible, and protect them from further damage. Provide ample natural drainage for the potentially infected wound and delay final closure.

f. Drainage. Adequate natural drainage of infected areas promotes healing. Generally, wicks or drains are unnecessary. On occasion, however, it may be better to remove an accumulation of pus (abscess) and insert light, loose packing to ensure continuous drainage. Sterilize the knife or other instrument used in making the incision for drainage to

avoid introducing other types of organisms. The best way to sterilize in the field is with dry or moist heat.

g. Dressings and Bandages. After cleansing, cover all wounds with a clean dressing. The dressing should be sterile; however, in the survival situation, any clean cloth helps protect the wound from further infection. A proper bandage anchors the dressing to the wound and affords further protection. Bandages should be snug enough to prevent slippage, yet not constrictive. Slight pressure reduces discomfort in most wounds and helps stop bleeding. Once in place, do NOT change dressings too frequently unless required; external soiling does not lessen the effectiveness of a dressing. Pain and some tissue damage accompanies any removal, and changing dressings increases the danger of infection.

h. Maggot Therapy. During World War I, maggots were an accepted treatment for infected wounds. They ate infected and dead tissue from those wounds. Before you decide to use maggots, however, remember that you must expose the wound to flies to introduce maggots. Because of their filthy habits, flies are likely to introduce other bacteria into the wound, possibly causing more complications. Also, maggots invade live, healthy tissue when the dead tissue is gone or not readily available. Despite its hazards, however, consider using maggot therapy (Figure 39) when you do not have antibiotics and the wound does not heal, has become severely infected, and ordinary debridement is impossible.

## 12. ILLNESSES

Many illnesses that are minor in a normal medical environment become major in a survival situation when the individual is alone without medications or medical care. Use standard methods (treat symptoms) to prevent expected diseases since treatment in a survival situation is so difficult. Key preventive methods are to exercise, maintain a proper diet, and maintain a current immunization record.

### a. Food Poisoning.

(1) Food poisoning is a significant threat to survivors. Due to sporadic food availability, excess foods must be preserved and saved for future consumption. Methods for preservation vary with the global area and situation. Bacterial contamination of food sources has historically caused more difficulty in survival situations than ingesting so-called poisonous plants and animals. Similarly, dysentary or water-borne diseases can be controlled with proper sanitation and personal hygiene.

(2) If the food poison is due to preformed toxin (staphylococcus or botulism), supportive treatment is best. Acute symptoms occur (nausea, vomiting, and diarrhea) soon after ingesting contaminated food. Keep the patient quiet and lying down, and ensure the patient drinks substantial quantities of water. If the poisoning is due to ingesting bacteria which grow within the body (delayed gradual onset of same symptoms), take antibiotics (if available). In both cases, symptoms may be alleviated by

frequently eating small amounts of fine, clean charcoal. In a prisoner of war situation, crush chalk, if it is available, to powder and eat it to coat and soothe the intestines. Proper sanitation and personal hygiene help prevent continued reinfection or spreading infection to others.

- STEP 1: Expose the wound to flies for one day and then cover the wound.**
- STEP 2: Check daily for maggots.**
- STEP 3: Once maggots develop, keep the wound covered but check it daily.**
- STEP 4: Remove all maggots once they have cleaned out all dead tissue and before they start on the healthy tissue. Increased pain and bright red blood in the wound indicate that the maggots have reached healthy tissue.**
- STEP 5: Flush the wound repeatedly with sterile water or fresh urine to remove the maggots.**
- STEP 6: Check the wound every four hours for several days to ensure all maggots have been removed.**
- STEP 7: Bandage the wound and treat it as any other wound. It should heal normally.**

Figure 39. Maggot therapy.

b. Skin infections. Boils, heat rash, and fungal infections rarely develop into serious health problems. However, they cause discomfort and should be treated.

(1) Boils. Apply warm compresses to bring the boil to a head. Then open the boil using a sterile knife, wire, needle, or similar item. Thoroughly clean out the pus using soap and water. Cover the boil site and check it periodically to ensure no further infection develops.

(2) Heat rash. Keep the area clean and dry. Apply powder if available. A cold compress may help relieve itching.

(3) Fungal infections. Keep the skin clean and dry, and expose the infected area to as much sunlight as possible. Do not scratch or use strong substances such as iodine and alcohol. You cannot "burn out" fungus.

c. Intestinal Parasites. You can usually avoid infestation of worms and other intestinal parasites if you take preventive measures. For instance, never go barefooted. The most effective way to avoid intestinal parasites is to not eat uncooked meat or raw vegetables that may possibly be contaminated with raw sewage or human feces used as fertilizer (night soil). However, if you should become infested and lack proper medicine, you might try one of the home remedies in figure 40. Keep in mind, though, that these home remedies are not without danger. Most of them work on the principle of changing the environment of the gastrointestinal tract.

**SALTWATER:** Mix 4 tablespoons of salt in 1 quart of water and drink. Do not repeat this treatment.

**TOBACCO:** Eat 1 to 1 1/2 cigarettes. The nicotine in the cigarette kills or stuns the worms long enough for your system to pass them. If the infestation is severe, repeat the treatment in 24 to 48 hours, but no sooner.

**KEROSENE:** Drink no more than 2 tablespoons of kerosene. If necessary, you can repeat this treatment in 24 to 28 hours, but not sooner.

**HOT PEPPER:** Peppers are effective only if they are a steady part of your diet. You can eat them raw or in soups or rice and meat dishes.

**Figure 40. Intestinal parasite home remedies.**

d. Diarrhea. This is a common, debilitating ailment caused by such things as a change in water and food, drinking contaminated water, eating spoiled food, becoming fatigued, and using dirty dishes. You can avoid most of these causes by practicing preventive medicine. If you get diarrhea, however, and do not have antidiarrheal medicine with you, you may find one of the following treatments is effective:

(1) Limit your intake to fluids for 24 hours.

(2) Drink 1 cup of strong tea every two hours until the diarrhea slows or stops. The tannic acid in the tea helps control diarrhea. Tannic acid is also found in the moist inner bark of hardwood trees. Boil the inner bark for two hours or more to release the tannic acid. Although this solution has a vile taste and smell, it stops most cases of diarrhea.

(3) Make a solution of treated water and one handful of ground chalk, charcoal, or dried bones. If you have some apple pomace or the rinds of citrus fruit, add an equal portion to the mixture to make it more

effective. Take 2 tablespoons of the solution every two hours until the diarrhea slows down or stops.

NOTE: You should drink a lot of liquids to replace the lost fluids.

### 13. AVOIDING ILLNESS

In a survival situation, the dangers of disease are multiplied. Applying the simple guidelines in Figure 41 enables the survivor to safeguard personal health and that of others.

### 14. HERBAL MEDICINE

Our modern-day wonder drugs and fine laboratories and equipment have obscured the old-time "country doctor" medicine--determination, common sense, and a few primitive treatments. In many areas of the world, however, people still depend on the local witch doctor or healer to cure their ailments. Many of the herbs (plants) and treatments they use are as effective as the most modern medications available. In fact, many modern medications come from refined herbs. For example, the white, stringy part of the rinds of citrus fruits and the apple pulp (apple pomace) left after pressing out the juice contain pectin. However, you should use herbal medicine with extreme caution and only when you lack or have limited medical supplies. Some herbal medicines are dangerous and may cause further damage or even death. Small doses of valerian root, for example, are effective in treating headaches and insomnia. In doses exceeding 1/2 teaspoon per day, valerian can aggravate the headache condition and cause delusions.

1. Keep all immunization shots current.
2. If possible, get seven or eight hours of sleep each night.
3. Purify all water obtained from natural sources before consuming.
4. After each meal, clean and disinfect eating utensils in boiling water.
5. Remove all cans, refuse, and food scraps from the camp area and bury them.
6. Exchange wet clothing for dry clothing as soon as possible to avoid loss of unnecessary body heat.
7. Personal items (pipes, canteens, towels, toothbrushes, handkerchiefs, and shaving items) should not be shared.
8. Do NOT soil the ground in the camp area with urine or feces. Use latrines if available. If latrines are not available, dig cat holes and cover the waste.
9. Bites and insects can be avoided by keeping the body clean, wearing proper protective clothing, and using a head net, improvised bed nets, and insect repellants.
10. Cleanse the mouth and teeth thoroughly at least once daily. Most dental problems associated with long-term survival situations can be prevented by using a toothbrush and toothpaste to remove accumulated food. If necessary, improvise devices for cleaning the teeth (paragraph 4).
11. Never put fingers and other contaminated objects into the mouth. Wash hands before handling food or drinking water, before using the fingers to care for the mouth and teeth, and before and after caring for the sick and injured. Also wash them after handling any material likely to carry disease germs.

Figure 41. Personal hygiene guidelines.

REVIEW EXERCISE

REQUIREMENT: Solve the following by selecting the correct answers:

1. An essential element for preventing infection in a survival environment is
  - A. cleanliness.
  - B. clean food items.
  - C. the first-aid kit.
  - D. protective clothing.
  
2. Teeth can be cleaned in a survival situation by
  - A. sucking a stone.
  - B. chewing a stick.
  - C. chewing the root of a willow tree.
  - D. rubbing the gums and teeth with sandy soil.
  
3. In a survival environment how much time should be planned for regular rest periods?
  - A. 10 minutes each hour
  - B. 15 minutes each hour
  - C. one hour every four hours
  - D. 30 minutes every four hours
  
4. Perform a cricothyroidotomy in life threatening situations involving
  - A. a broken neck.
  - B. severe bleeding.
  - C. severe neck wounds.
  - D. upper airway obstruction.
  
5. In the absence of aspirin, what can you use to relieve pain?
  - A. cattails
  - B. onion grass
  - C. pine needle tea
  - D. willow tree bark tea
  
6. In injuries involving extruded intestines,
  - A. allow the injury to air dry.
  - B. cover the extruded bowel with a large dressing.
  - C. push the intestines back into the abdominal cavity.
  - D. clean the bowel with water or urine and push the intestines back into the abdominal cavity.

7. An effective treatment for food poisoning in a survival environment is to eat small quantities of

- A. iodine.
- B. pencil lead.
- C. termite droppings.
- D. fine, clean charcoal.

REVIEW EXERCISE SOLUTIONS

1. A. (paragraph 3)
2. B. (paragraph 4a)
3. A. (paragraph 7b)
4. D. (paragraph 8a)
5. D. (paragraph 8c(2))
6. B. (paragraph 10b)
7. D. (paragraph 12a)

## APPENDIX A--ISSUE SURVIVAL KITS AND SURVIVAL VESTS

### 1. BASIC SURVIVAL KITS

The Army has several basic survival kits available for issue to aircrew members. Each kit's components are uniquely assembled to support one of three environmental extremes: hot climate, cold climate, and overwater. Each of these kits is available in two configurations based on the aircraft type in which the kit is used and stowed. One kit configuration is designed for use and stowage in all aircraft other than the OV-1 (Figures 42, 43, and 44). The other kit configuration, called the rigid seat survival kit (known as the RSSK), is designed for stowage in the seat pan of the OV-1 ejection seat (Figures 45, 46, and 47).

### 2. SRU-21/P AND SRU-31/P SURVIVAL VESTS

The SRU-21/P survival vest is a complete survival package that can be worn by aircrews on all types of Army aircraft except the OV-1 (Figure 48). The SRU-31/P is designed for use by aircrews in conjunction with the rigid seat survival kit of the OV-1 (Figure 49). The majority of the SRU-31/P vest components are contained in two packets stored in the front of the vest (Figure 50).

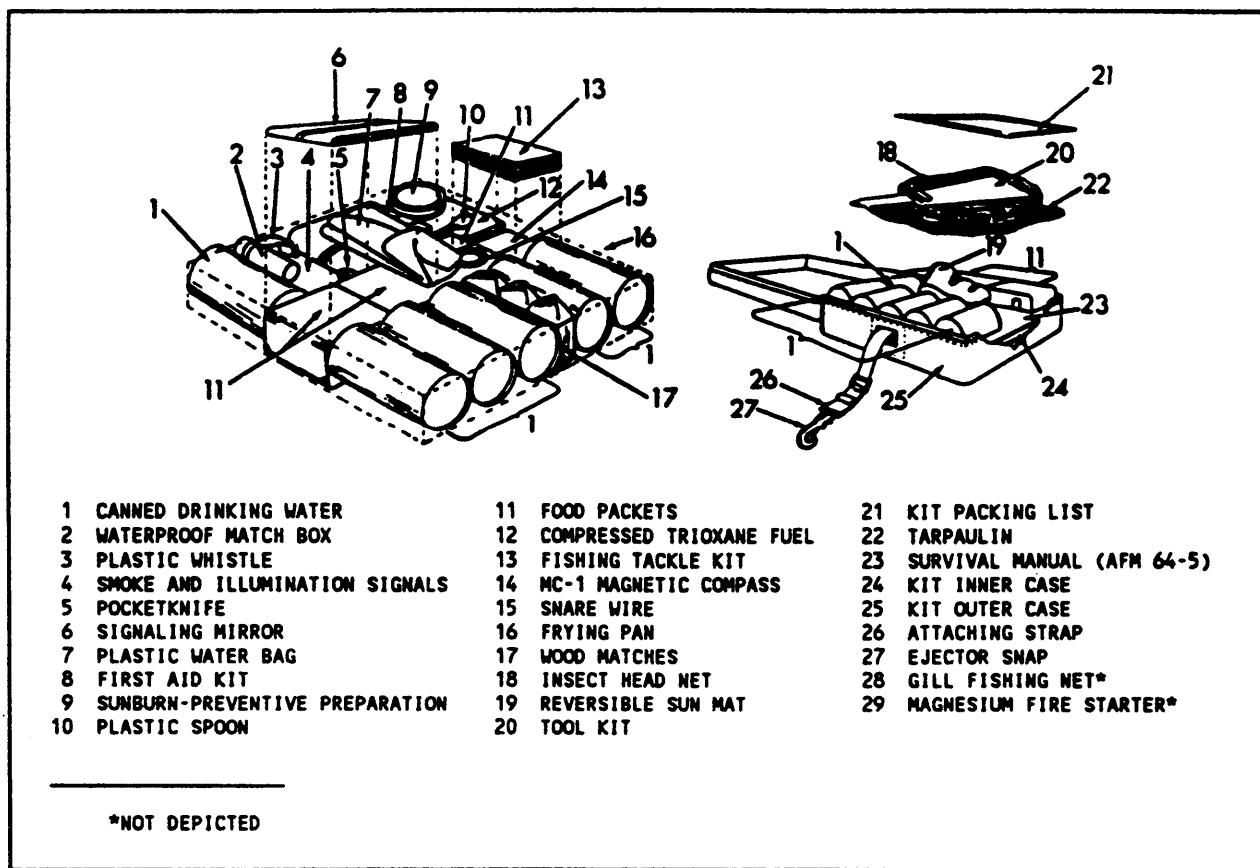
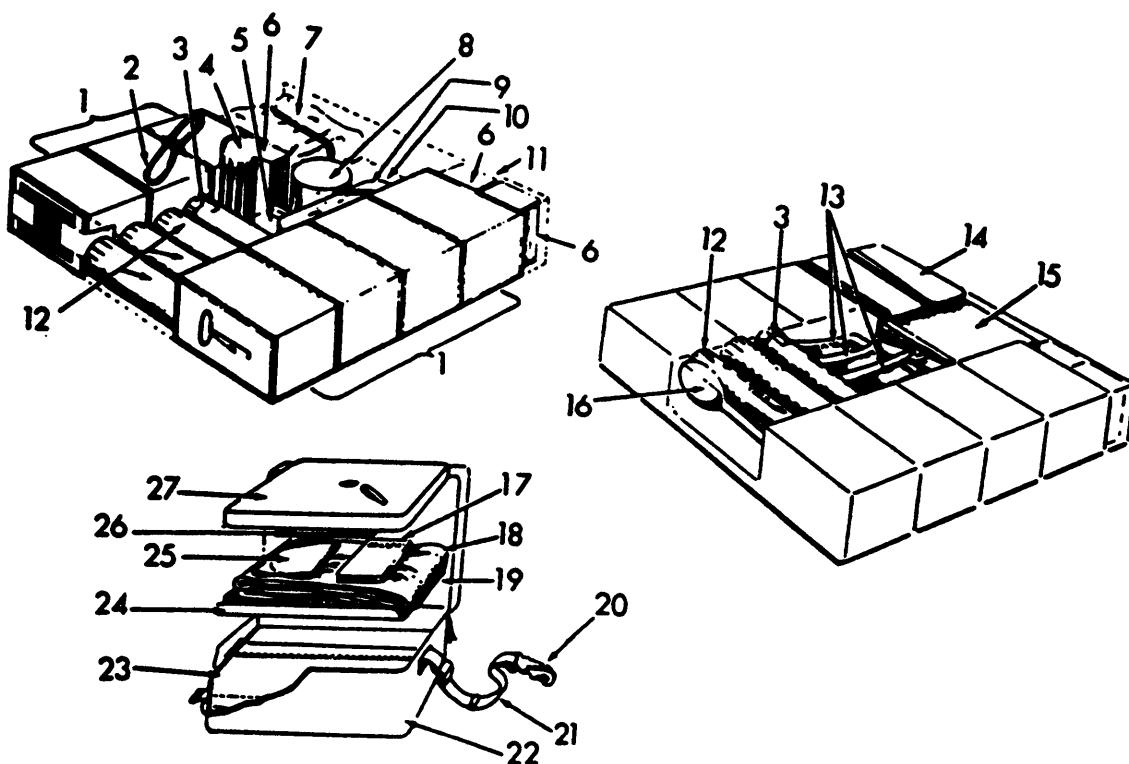


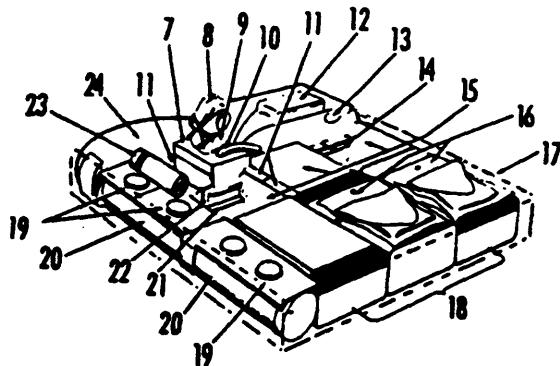
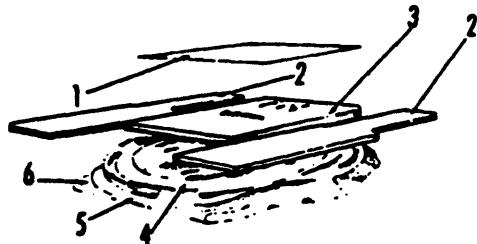
Figure 42. Hot climate kit contents (other than OV-1)



1 FOOD PACKETS	11 FRYING PAN	21 ATTACHING STRAP
2 SNARE WIRE	12 ILLUMINATING CANDLES	22 KIT OUTER CASE
3 SMOKE AND ILLUMINATION SIGNALS	13 COMPRESSED TRIOXANE FUEL	23 KIT INNER CASE
4 WATERPROOF MATCH BOX	14 SIGNALING MIRROR	24 SHOVEL
5 SAW-KNIFE BLADE	15 SURVIVAL FISHING KIT	25 WATER BAG
6 WOOD MATCHES	16 PLASTIC SPOON	26 PACKING LIST
7 FIRST AID KIT	17 SURVIVAL MANUAL (AFM 64-5)	27 SLEEPING BAG
8 MC-1 MAGNETIC COMPASS	18 PONCHO	28 GILL FISHING NET*
9 POCKETKNIFE	19 INSECT HEAD NET	29 MAGNESIUM FIRE STARTER*
10 SAW-KNIFE-SHOVEL HANDLE	20 EJECTOR SNAP	

\*NOT DEPICTED

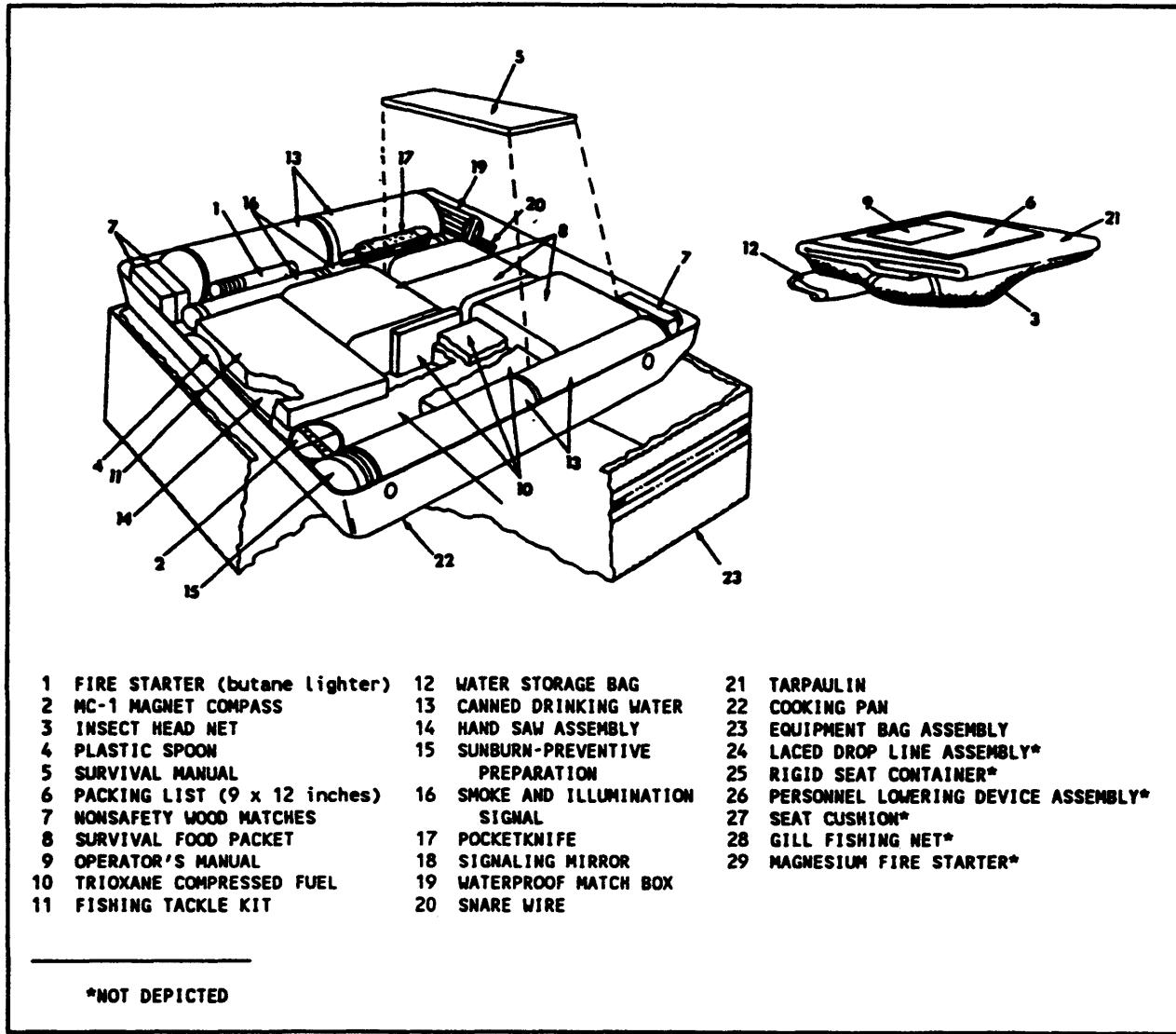
**Figure 43. Cold climate kit contents (other than OV-1)**



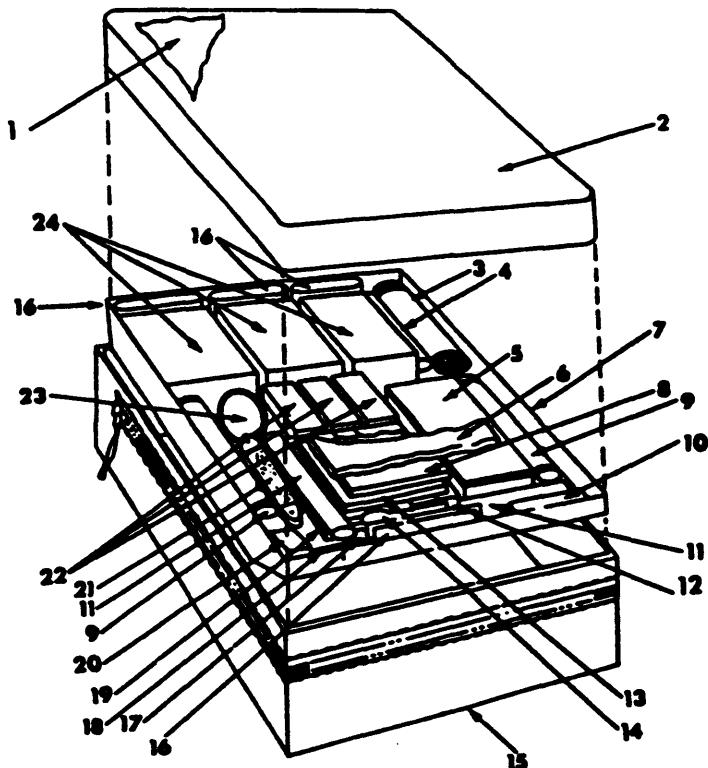
1 KIT PACKING LIST	10 SUNBURN-PREVENTIVE PREPARATION	19 COMPRESSED TRIOXANE FUEL
2 RAFT BOAT PADDLE	11 WOOD MATCHES	20 SMOKE AND ILLUMINATION SIGNALS
3 SURVIVAL MANUAL (AFM 64-5)	12 FIRST AID KIT	21 SIGNALING MIRROR
4 INSECT HEAD NET	13 PLASTIC SPOON	22 FISHING TACKLE KIT
5 REVERSIBLE SUN HAT	14 POCKETKNIFE	23 WATERPROOF MATCH BOX
6 WATER STORAGE BAG	15 FOOD PACKETS	24 RAFT REPAIR KIT
7 MC-1 MAGNETIC COMPASS	16 FLUORESCIN SEA MARKER	25 GILL FISHING NET*
8 BOAT BAILER	17 FRYING PAN	26 MAGNESIUM FIRE STARTER*
9 SPONGE	18 SEAWATER DESALTER KIT	

\*NOT DEPICTED

Figure 44. Overwater kit contents (other than OV-1)



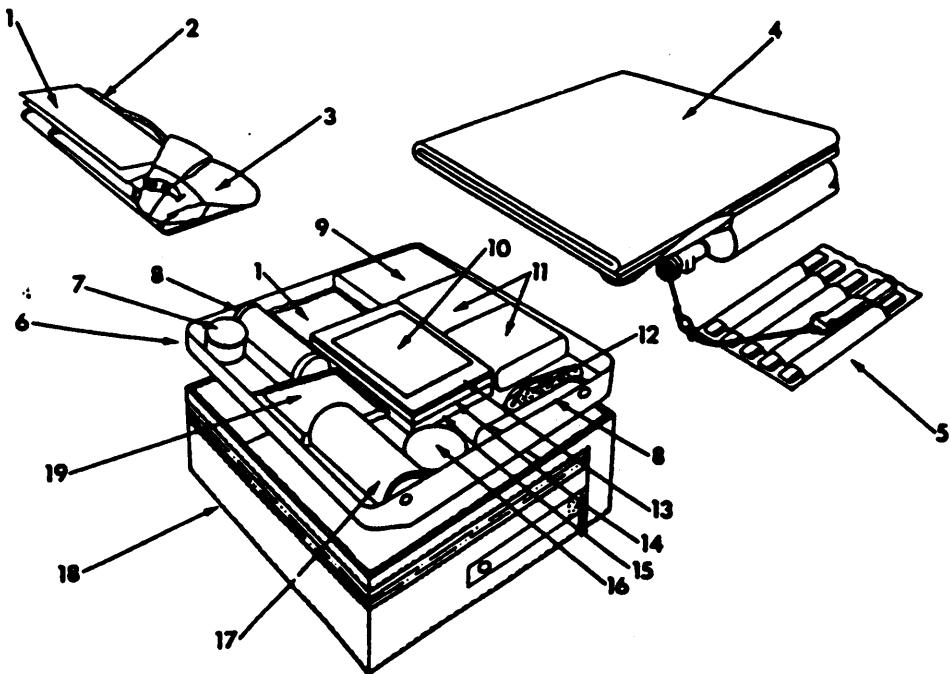
**Figure 45. OV-1 hot climate survival kit components**



1 PACKING LIST	11 CANDLE	21 POCKETKNIFE
2 SLEEPING BAG	12 SIGNALING MIRROR	22 WOOD MATCHES
3 HEAD INSECT NET	13 HAND SAW ASSEMBLY	23 SUNBURN-PREVENTIVE PREPARATION
4 FIRE STARTER (butane lighter)	14 PLASTIC SPOON	24 SURVIVAL FOOD PACKETS
5 FISHING TACKLE KIT	15 EQUIPMENT BAG ASSEMBLY	25 DROP LINE ASSEMBLY*
6 DRINKING WATER STORAGE BAG	16 COMPRESSED TRIXANE FUEL	26 RIGID SEAT CONTAINER*
7 COOKING PAN	17 WATERPROOF MATCH BOX	27 PERSONNEL LOWERING DEVICE*
8 OPERATOR'S MANUAL	18 SNARE WIRE	28 SEAT CUSHION*
9 SMOKE AND ILLUMINATION SIGNAL	19 SURVIVAL MANUAL	29 GILL FISHING NET*
10 PARACHUTE SURVIVAL MANUAL	20 MC-1 MAGNETIC COMPASS	30 MAGNESIUM FIRE STARTER*

\*NOT DEPICTED

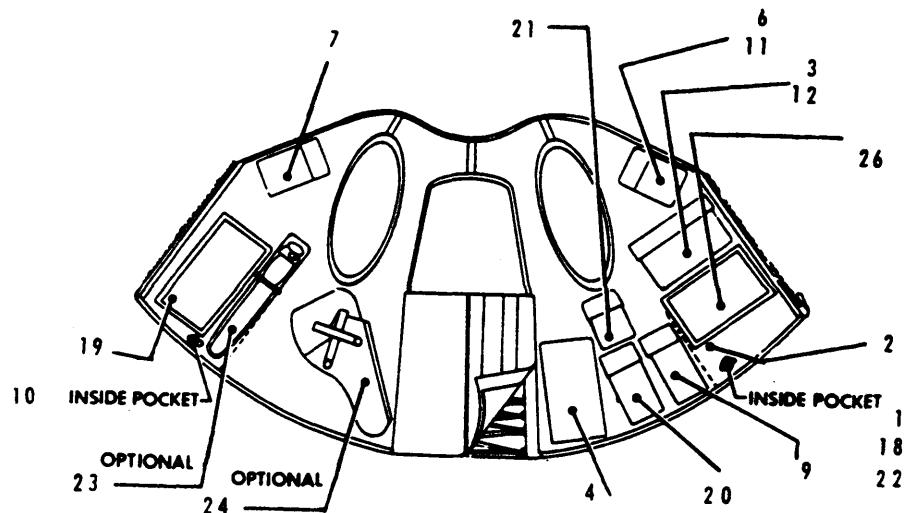
**Figure 46. OV-1 cold climate survival kit components**



1 PACKING LIST	9 MK-2 SALTWATER DISTILLER KIT	17 DRINKING WATER
2 DRINKING WATER STORAGE BAG	10 OPERATOR'S MANUAL	18 EQUIPMENT BAG ASSEMBLY
3 REVERSIBLE SUN HAT	11 SURVIVAL FOOD PACKET	19 FLUORESCIN SEA MARKER
4 PK-2 INFLATABLE LIFE RAFT	12 POCKETKNIFE	20 DROP LINE ASSEMBLY*
5 LACED DROP LINE ASSEMBLY	13 CELLULOSE SPONGE	21 RIGID SEAT CONTAINER*
6 COOKING PAN	14 FISHING TACKLE KIT	22 PERSONNEL LOWERING DEVICE*
7 MC-1 MAGNETIC COMPASS	15 SIGNALING MIRROR	23 GILL FISHING NET*
8 SMOKE AND ILLUMINATION SIGNAL	16 SUNBURN-PREVENTIVE PREPARATION	

\*NOT DEPICTED

**Figure 47. OV-1 overwater survival kit components**



1 VEST CONTENTS CHECKLIST	15 DELETED
2 SMALL OR LARGE SURVIVAL VEST	16 DELETED
3 DISTRESS LIGHT MARKER (strobe light)	17 DELETED
4 FOLIAGE PENETRATING SIGNAL KIT (flares)	18 CHEMLIGHTS
5 FIRST AID KIT	19 AN/PRC-90 OR -112 RADIO <sup>2</sup>
6 NONPNEUMATIC CAMOUFLAGE TOURNIQUET	20 COMBAT CASUALTY BLANKET
7 LENSATIC COMPASS	21 PLASTIC BALL WHISTLE
8 DELETED	22 OPERATOR'S MANUAL TM 55-8465-215-10 <sup>3</sup>
9 POCKET KNIFE	23 HUNTING KNIFE SHEATH <sup>4</sup>
10 DRINKING WATER STORAGE BAG, SIZE B	24 .38 OR 9MM CALIBER PISTOL HOLSTER <sup>5</sup>
11 EMERGENCY SIGNALING MIRROR	25 DELETED
12 MAGNESIUM AVIATION SURVIVAL FIRE STARTER	26 1 OUNCE INSECT REPELLANT
13 ASSEMBLY INSTRUCTION SHEET <sup>1</sup>	27 DELETED
14 DELETED	

<sup>1</sup>Not shown. Put in either inside pocket.

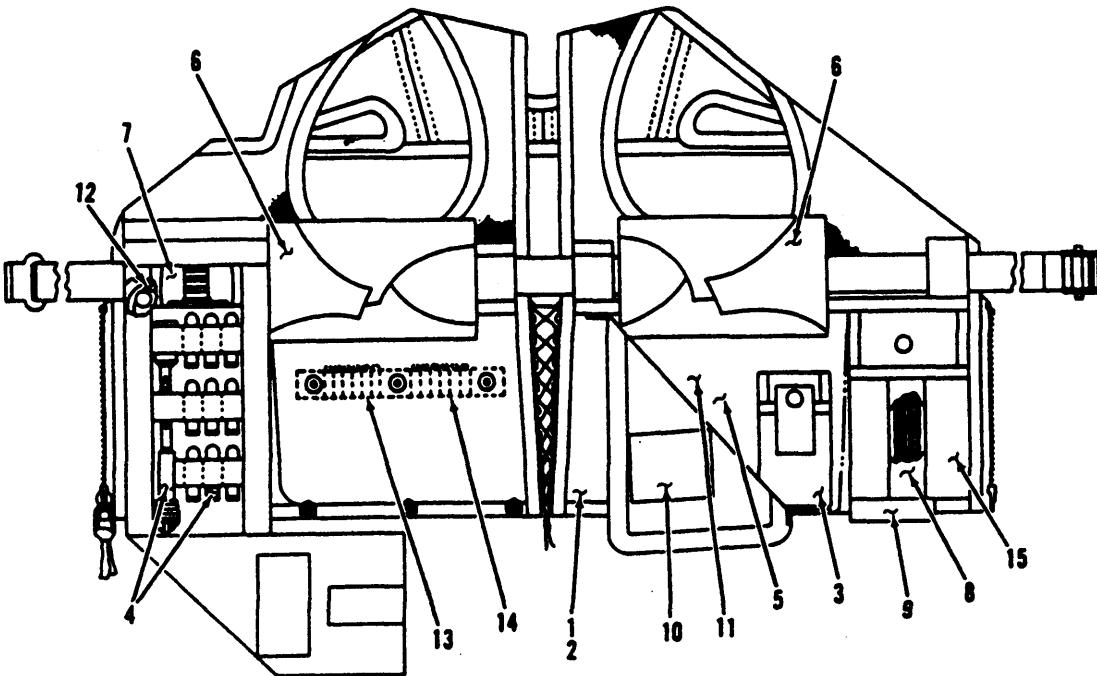
<sup>2</sup>Pocket used will be NSN 8415-00-432-3616.

<sup>3</sup>Not shown. Put in either inside pocket.

<sup>4</sup>Optional. If issued, it may be located as shown in this drawing alongside the PRC-90 radio packet (item 19).

<sup>5</sup>Optional. Holster will be fitted to wearer as shown.

**Figure 48. SRU-21/P survival vest and components**

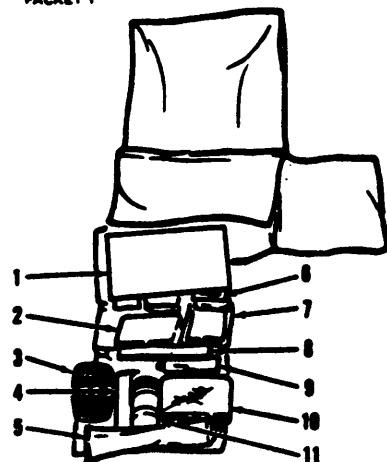


1. Survival vest, small	9. Plastic ball whistle
2. Survival vest, large	10. Signaling mirror
3. Distress marker light	11. Assembly instruction sheet
4. Distress signal kit	12. .38 caliber special revolver*
5. SRU 31/P Packets 1 and 2	13. .38 caliber ball cartridges*
6. Life preserver	14. .38 caliber tracer cartridges*
7. Sheathed knife	15. Survival receiver-transmitter*
8. Hook blade pocket knife	

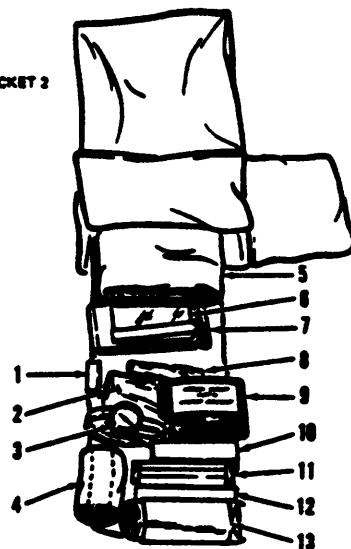
\*Issued by unit commander.

**Figure 49. SRU-31/P survival vest and components.**

PACKET 1



PACKET 2

Packet 1 Contents

1. Instruction card
2. Soap
3. Surgical tape
4. Water receptacle
5. Insect repellent
6. Pain killer
7. Antidiarrhea
8. Bandaid
9. Bacitracin (eye ointment)
10. Bandage (elastic)
11. Water pure tablets

Packet 2 Contents

1. Chiclets
2. Tinder
3. Compass (wrist)
4. Water bag (1 quart)
5. Signal panel
6. Mirror
7. Razor knife
8. Tweezer and pins
9. Mosquito headnet and mittens
10. Charms
11. Enerjets
12. Metal match
13. Flashguards (red and blue)

Figure 50. Packet 1 and 2 (components of SRU-31/P).

## APPENDIX B

### SUGGESTED ITEMS FOR A PERSONAL SURVIVAL KIT

#### 1. FLINT AND STEEL

Rugged and dependable, flint and steel provide thousands of lights in all kinds of weather. The striker blade can be sharpened for use as an emergency skinning knife or scalpel. It also can be used as a sharpening tool for knives, hooks, and so forth.

#### 2. SNARE WIRE

If possible you should carry a minimum of 50 feet of stainless steel or annealed brass wire from .025 to .030 inch diameter. It can be used primarily for fixed small animal snares, but you can catch ground nesting birds (quail or grouse), slow moving animals (porcupine), and reptiles (snakes, turtles, or lizards). You can catch some varieties of fish by using a loop snare on the end of a stick. When shoe soles become loose, use the wire to wire them into place.

#### 3. SIGNAL MIRROR

A signal mirror works with sunlight, moonlight, or the searchlights of crashboats or other rescuing vehicles. It can be used as well with a cigarette lighter, candle, or match; or it can be hung in the sun in an open area. This mirror works well even if shattered in a crash landing. It makes good bait for a raccoon deadfall trap. When used in daytime and with good visibility, a mirror flash can be seen at a distance of 30 miles at an altitude of 10,000 feet.

#### 4. FISH AND SNARE LINE

Carry a minimum of 50 feet or 40 pound test monofilament fish leader. Use it primarily for fishing, but you may use it for cage, twitchup treadle, and deadfall traps and snares. Also it serves as emergency sewing thread and string for an improvised hunting bow (if the line is braided three strands).

#### 5. FISHHOOKS

Several numbers 8, 10, and 12 fishhooks suffice for most varieties of fresh-water and salt-water fish. They can also be used to catch small animals, frogs, turtles, waterfowl, and other birds.

#### 6. MATCHES

If you completely immerse a dozen or more kitchen matches in melted beeswax, it makes them waterproof and wind resistant. Keep the matches in a waterproof container, but don't pack them so tightly that you cannot

withdraw them easily with cold, numb, or wet fingers. To provide a dry striking surface, keep a scrap of emery cloth in the container placed where it won't contact the match heads.

#### 7. CLEAR PLASTIC SHEETING AND TRASH BAGS

Plastic sheets should be 1 mil thick and 4 feet by 4 feet. Carry a minimum of two for solar still construction. Large clear plastic trash bags can be used for evaporation and transpiration bags to obtain water.

#### 8. WIRE SAW

Carry a wire saw designed for cutting wood. The metal cutting variety is far less efficient on wood and tends to become clogged quickly. A suggested length is 18 to 24 inches. This saw may be used for emergency amputations and can be used for quartering larger game animals.

#### 9. RUBBER PROPHYLACTICS (CONDOMS)

The condom is one of the most comprehensive use items available. Two, inexpensive heavy gauge types are recommended. It can be used for--

- a. Water storage. (Place condom in a sock or other fabric container for support.)
- b. Emesis container (barf bag) in shark infested waters.
- c. Protective covering for small, medium-size items to preclude rust and exposure and keep fire tinder dry.
- d. A slingshot. (Two stretched full length can be tied together.)
- e. Wrapping around ankles to blouse trousers.
- f. Food storage.
- g. Quick repair for a ruptured life preserver.
- h. Waterproof cover for wounds. (Inexpensive heavy gauge types are best.)

#### 10. 550 CORD (SUSPENSION LINE)

This cord should be at least 30 feet. It can be used for traps, snares, and building shelters. If gutted, guts can be used as fishing line or making a gill net if a large amount is available.

#### 11. POCKET KNIFE WITH TWO BLADES AND A WHETSTONE

The pocket knife is good for an aid in cleaning fish or small game. It also can be used for light-duty cutting, such as small branches for

game traps or shelter material. A whetstone is handy to sharpen your knife, fishhooks, or needles.

#### 12. CHAP STICK

Chap stick is useful in treating chapping, rashes, sunburn, cold sores, and fever blisters. Some types are flammable and can be used for starting fires. Most types can be used as candles using cotton string for wicks.

NOTE: Do not use the inner core of a parachute shroud line for a wick. It is made of nylon and is useless for this purpose.

#### 13. WRIST COMPASS

Try to obtain a waterproof model which has a needle that will lock firmly when not in use. This is an invaluable navigation aid.

#### 14. ROTENONE OR OTHER FISH POISON

Rotenone is effective only in temperate and tropical climates. One ounce of this powder emptied into a small river or creek kills fish for several miles downstream. The fish killed are not harmful for human consumption. Several ounces can be kept in a lightproof, waterproof package.

#### 15. SAFETY PINS, MAGNIFYING GLASS, AND SANITARY NAPKINS

a. Safety pins are used for fixing clothing, improvised fishhooks, and spear. A magnifying glass can be used for starting fires.

b. Sanitary napkins should always be considered as part of a female crew member's personal survival kit. They can also be used as bandages for large wounds or a form of kindling.

#### 16. CANDLE

Choose a tallow candle, which will light in any temperature. It can serve as emergency food or for lubricating zippers. A 4-inch candle weighs less than 1 ounce and burns 3 1/4 hours if protected from the wind. Practically indestructable when dropped or soaked in water, it provides light for reading maps and compass and provides heat in a snow cave or igloo. A candle burning inside a tin can makes a heater for a small, snug shelter and a fairly good lantern which operates in light wind and rain. A candle will ignite fuel so damp that matches alone would never ignite. When other fuel is not available, a candle may be used for cooking food or preparing hot beverages. It can lubricate the hand-held socket used in the bow drill method of fire making. Melted candle wax seals the seams of preheated leather boots. Rubbing the candle on the heels and toes of your socks prevents blisters when your shoes begin to chafe.

## **17. DARNING AND SAILMAKERS NEEDLES**

These needles can be used for repairing clothing and equipment and for emergency suturing of deep cuts and gashes. They can also be used to improvise small frog and fish gigs.

## **18. BROADHEAD ARROWHEAD**

A commercial arrowhead with a serrated base can be used in an arrow or fish spear configuration. It can be sharpened for use as a knife or razor.

## **19. COLORED YARN**

Several pieces of yarn 2 to 3 inches long of various colors can be used to make fish lures and bait for the ojibwa bird snare. It is useful in making worm balls for hookless fishing for eels and catfish.

## **20. PLASTIC BAGS (ZIPLOC)**

These bags protect your watch, map, compass, pistol, knife, and other items from soaking rainwater and from salt water or humid jungle corrosion. With the end cut off, it can be pulled over a bandage to keep it dry. When placed inside a sock or any improvised cloth bag, it can be used as a container for food and water.

## **21. SURGICAL HOSE**

A surgical hose (tube) can be used to improvise a slingshot, tourniquet, or drinking tube for a water still. It should be 1/8 to 1/4 inch in diameter.

## **22. HEAVY FOIL**

Foil can be used for cooking, signaling, wrapping food, and reflecting heat and light. It can also be used as a fishing lure.

## **23. FLASHLIGHT**

Your flashlight should have red lens covers. Be sure to carry extra batteries.

## **24. WRISTWATCH**

A watch, of course, is used for telling time; however, it can be used as an improvised means of finding direction.

## 25. WHISTLE

A whistle is used for attracting the attention of ground rescue parties. It can be heard at further distances than the human voice and is less tiring to use.

NOTE: Additional items to include in your survival kit are those listed in Figure 51.

6" file	Pen-gun and flare
Strobe light	Needle-nose pliers
000 steel wool	Pen light with batteries
Morse code card	Gill net for catching fish or birds
Camouflage stick	

Figure 51. Additional survival items.

## 26. MEDICAL SUPPLIES

Surgical tape can be used for bandaging wounds, repairing equipment, and closing cuts or gashes like adhesive clamps. A list of items for medical supplies are in Figure 52.

Tweezers	Eye ointment (1 tube)
Band-Aids	Roll of gauze (1 inch wide)
Surgical razor	Antimalaria tablets (6 to 8)
Aspirin tablets	Lomotil antidiarrheal tablets (6 to 8)
Insect repellent	Antiseptic solution (iodine--1 bottle)
Surgical scissors	Water purification tablets (iodine 1 bottle)
Compress bandage (2)	Surgical adhesive tape (1/2 inch by 10 yards)

Figure 52. Medical supply items.